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## Field Evaluation of Jail Sanctions for DWI

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16. Abstract The objective of this study was to evaluate the effect of Tennessee's two-day mandatory jail sanction for first-offense DWI on general deterrence, special deterrence, and the operation of the drinking-driver control system. Our analysis of general deterrence analyzed accident data from Tennessee and two comparison states without mandatory jail penalties, Alabama and Kentucky, were used to provide quantitative measures of the highway safety effect. In addition, data were collected to determine driver awareness of the mandatory jail law, and whether the law has had any effect on self-reported drinking-driving behavior. The recidivism analysis examined the recidivism rates of Tennessee drivers convicted of DWI before and after the introduction of the mandatory jail law. The analysis of the effects of mandatory jail on the drinking-driver control system was accomplished through two case studies, one in Chattanooga and the other in Nashville. Recidivism analyses were also conducted in these two locations. The major finding of this study is that the jail sanction had an initial effect on drunk-driving recidivism in Tennessee, but no measurable effect on alcohol-related crashes. We recommend more testing of mandatory jail in Tennessee in conjunction with a large-scale and continuing program of public information and education. Only then can the general-deterrent effect, if any, be measured. Pending the outcome of these tests, we recommend that states exercise caution in adopting mandatory jail as a sanction for drunk driving.			
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## 1.0 INTRODUCTION

This is the final report for NHTSA contract number DTNH22-84-C-07164, entitled "Field Evaluation Jail Sanctions for DWI." Additional funding for extending the database was provided under purchase order number DTNH22-87-P-07402. The project evaluated the effect of Tennessee's two-day mandatory jail sanction for first-offense driving-under-the-influence (called "DUI" rather than "DWI" in Tennessee) on general deterrence, special deterrence, and the operation of the drinking-driver control system. The project began on December 20, 1984, and was completed on November 15, 1987.

The substantive part of this report is organized by the three major sub-studies that were performed in the project. Section 2.0 addresses the general deterrence sub-study. The recidivism and operational effects sub-studies are treated in Sections 3.0 and 4.0, respectively. The overall conclusions and recommendations of the study are presented in Section 5.0.

The approach followed in the project involved an in-depth, comprehensive case study of the mandatory jail sanction in Tennessee. The statute encompassing this sanction went into effect on July 1, 1982, and requires judges to impose a 48-hour jail penalty for all drivers convicted for the first time of driving while under the influence of alcohol. The highway safety impact of the sanction, including both general deterrence and special deterrence (i.e., recidivism) effects, were analyzed statewide.

Our analysis of general deterrence used interrupted time-series methods to assess whether the jail sanction has had any statistically significant effect on the proclivity of drivers in general to drive while intoxicated. Accident data from Tennessee and two comparison states without mandatory jail penalties, Alabama and Kentucky, were used to provide quantitative measures of the highway safety effect. In addition, the Tennessee Department of Safety administered a written questionnaire to driver license applicants to determine their awareness of the mandatory jail law, and whether it has had any effect on their reported drinking-driving behavior. The recidivism analysis examined the recidivism rates of Tennessee drivers convicted of DUI before and after the introduction of the mandatory jail law to see if there are any significant differences that could be attributed to the jail sanction.

The analysis of the effects of mandatory jail on the drinking-driver control system was accomplished through two case studies, one in Chattanooga and the other in Nashville. Recidivism analyses were also conducted in these two locations. Project staff held structured discussions with system personnel in these cities, and collected qualitative and quantitative data to determine how the jail sanction has affected the procedures, performance, and resource requirements of the systems.

## 2.0 GENERAL DETERRENCE

The overall objective of the general deterrence substudy was to determine whether mandatory jail had any significant effect in reducing drinking driving among drivers in general. Two different areas were explored:

- An analysis of accident data and related data before and after the introduction of mandatory jail to see if there was a reduction in alcohol-related crashes that could be attributed to jail; and
- A survey of drivers to determine their awareness of mandatory jail and its effect on their driving behavior.

Activities and results in each of these two areas are discussed below.

### 2.1 Fatal Accidents

2.1.1 Approach. Data from the Fatal Accident Reporting System (FARS) were obtained from the Automated Data Access and Analysis System (ADAAS) maintained by The University of Michigan Transportation Research Institute. Reliable objective data on alcohol-related accidents (e.g., number of fatally-injured drivers with blood-alcohol concentration exceeding 0.10%) were not available in the study states during the period being studied. Therefore indirect or surrogate measures of alcohol-related accidents had to be used. Research indicates that the best single-factor surrogate of alcohol-related accidents is **nighttime single-vehicle fatal accidents**. Therefore, daytime and nighttime, and single-vehicle and multi-vehicle fatal accidents were distinguished.

Quarterly counts of non-pedestrian fatal accidents were prepared for the "treatment" state (Tennessee) and the two "control" states (Alabama and Kentucky) for the years 1977 through 1986. Several different types of non-pedestrian fatal accidents were studied, including:

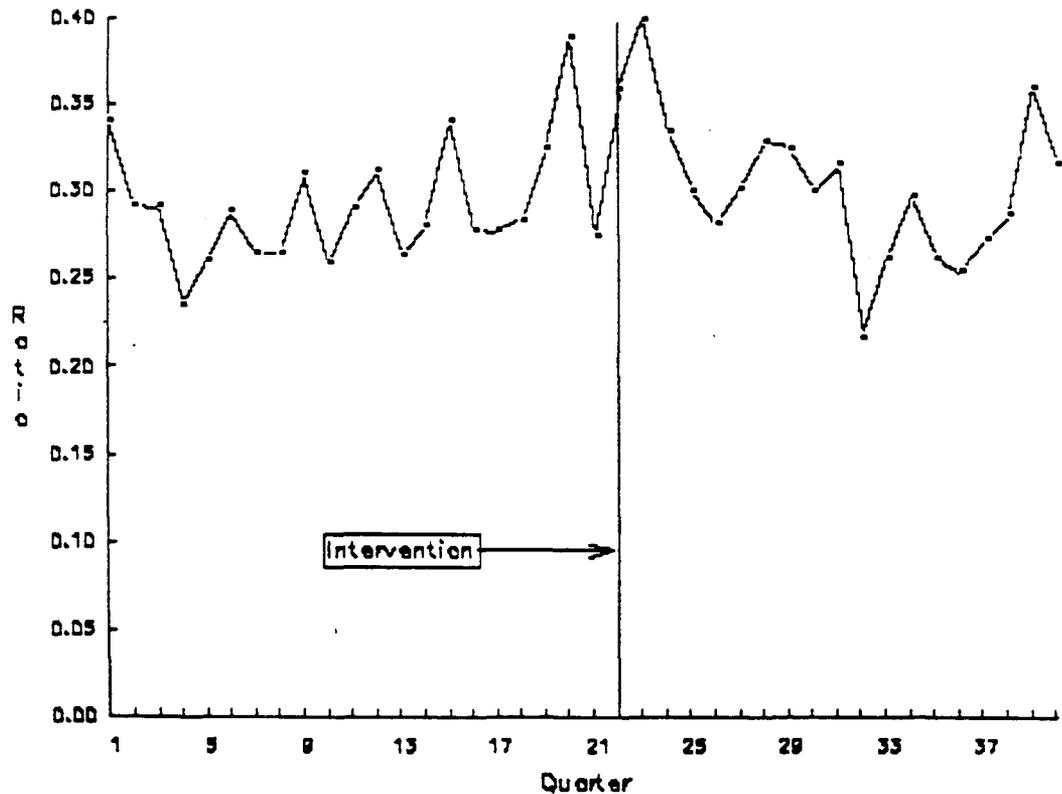
- Nighttime single-vehicle fatal accidents (variable Y4);
- Nighttime multi-vehicle fatal accidents (Y3);
- Nighttime fatal accidents (Y7);
- Single-vehicle fatal accidents (Y2);
- Daytime fatal accidents (Y6);
- Daytime single-vehicle fatal accidents (Y9);
- Daytime multivehicle fatal accidents (Y8); and
- Fatal accidents (Y5).

A large number of analyses were performed, using a variety of statistical techniques and models, including linear and log-linear regression models.

2.1.2 **Results.** We first examined the ratio of nighttime fatal accidents to all fatal accidents. Figure 2-1 plots this ratio. The mandatory jail intervention occurred at the second quarter of 1982 as indicated by the vertical line. It is apparent that the ratio shows an upward trend until the 20th or 23rd quarter, and a declining trend thereafter. Indeed, an analysis showed that the initial trend is significant, as is the change after the intervention.

However, at this point it cannot be concluded that the intervention had an effect, which might have levelled off by the 34th quarter, and might even have decreased later. This conclusion would be completely unjustified as will be seen.

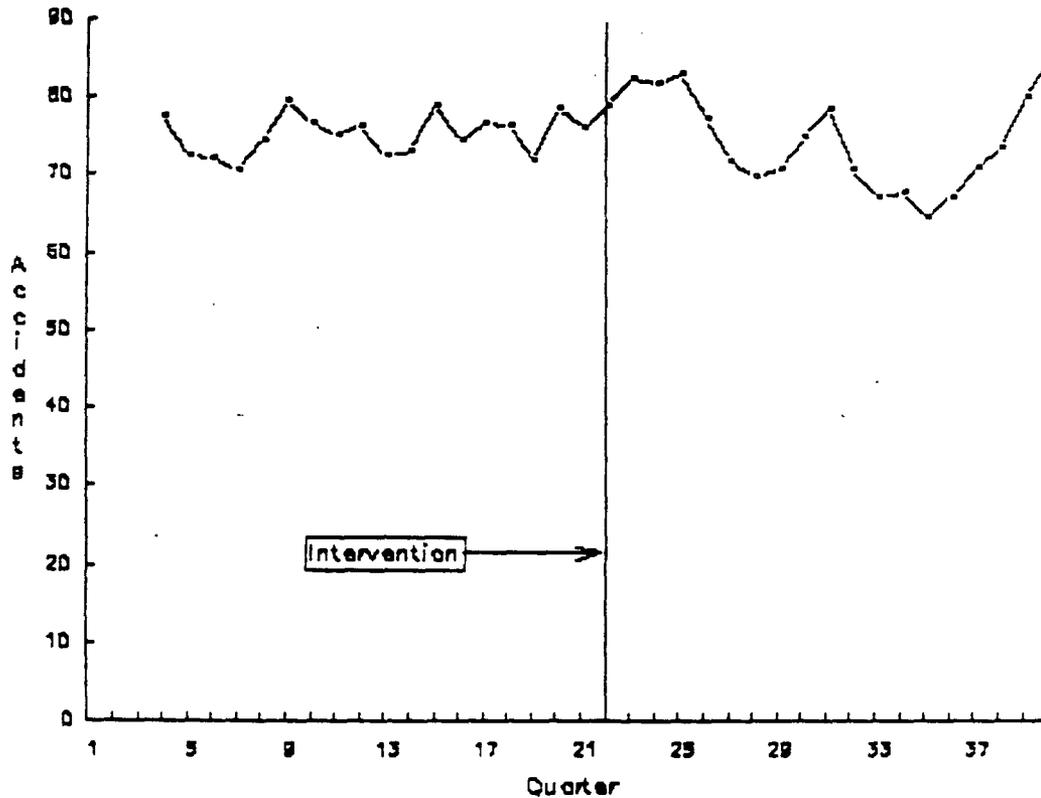
Figure 2-1: Ratio of Nighttime Single-Vehicle Fatal Accidents to All Fatal Accidents in Tennessee



Plots of the data for the various accident types show large fluctuations, and also seasonal patterns. Therefore, a visual assessment and recognition of other patterns is difficult. To reduce this problem, we used graphs showing **annual moving averages**. This eliminates seasonal variations and reduces random fluctuations, but it also smoothes peaks and steps. For the statistical analyses, the actual data were used.

Figure 2-2 is a plot of nighttime single-vehicle fatal accidents in Tennessee versus quarter of the year, starting with the first quarter of 1977 and extending through the last quarter of 1986.

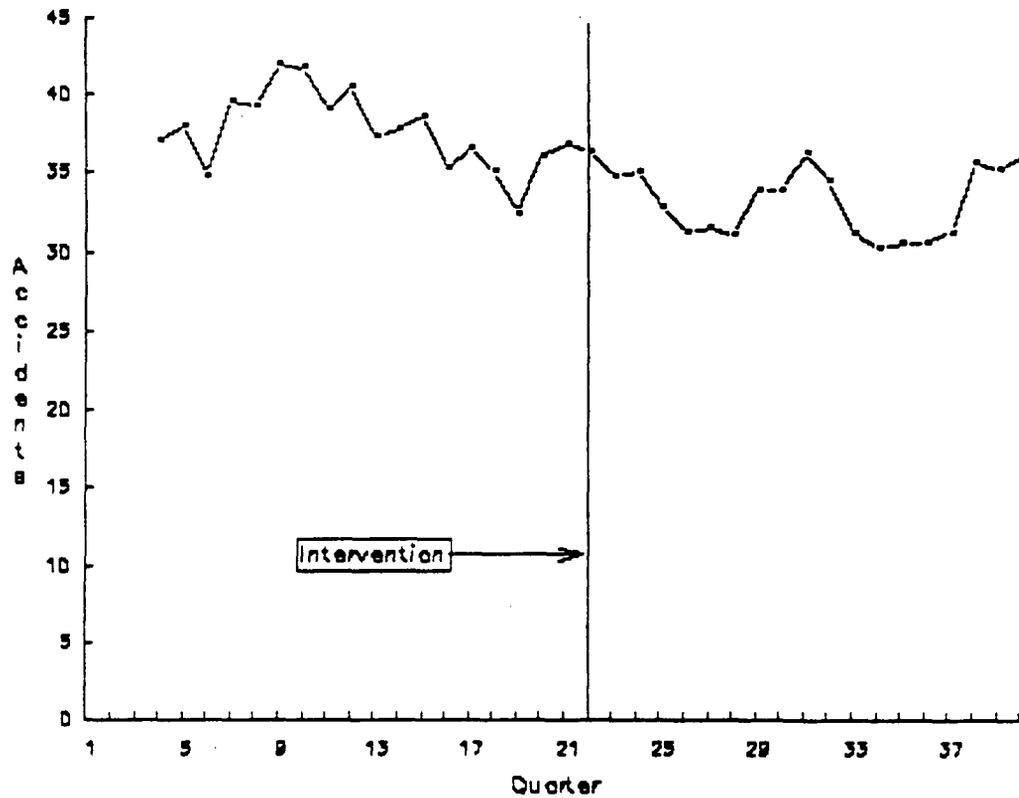
Figure 2-2: Nighttime Single-Vehicle Fatal Accidents in Tennessee - Annual Moving Averages



Visual examination of this time series reveals fluctuations around a constant value, or a slightly increasing trend until the 23rd or 24th quarter and thereafter an irregular decline, ended by a sharp increase after the 34th quarter. This agrees with the pattern observed for the ratio of nighttime to all accidents.

Figure 2-3 shows nighttime multivehicle fatal accidents. Here, the pattern is different. Although the numbers after the 22nd quarter tend to be lower than those before, there was already a declining trend beginning about the 8th quarter. Indeed, this declining trend levelled off around the 20th quarter. This definitely does not suggest an effect of the intervention.

Figure 2-3: Nighttime Multi-Vehicle Fatal Accidents In Tennessee Annual Moving Averages



As control data, we used single-vehicle and multivehicle daytime fatal accidents (Figures 2-4 and 2-5). They show a completely different pattern, declining dramatically until the 21st quarter and increasing rapidly thereafter. One explanation for this is given by Figure 2-6 which shows the unemployment rate in Tennessee.

Fatal accidents are inversely related to economic factors, of which unemployment is a very important one. However, the relationship is not perfect: unemployment reaches a peak later than the minimum of the accident numbers. Detailed analyses have also shown that the effect of unemployment may be non-linear. Changes in unemployment have the largest effect at middle levels of unemployment, and have smaller effects at low and high levels. Other economic factors also play a role. For example, total employment has an effect independent of unemployment. However, during much of the study period employment and unemployment moved in similar fashion; only beginning in 1984 when unemployment had levelled off, did total employment continue to grow. Therefore, the two effects could not be separated.

Figure 2-4: Daytime Single-Vehicle Fatal Accidents In Tennessee Annual Moving Averages

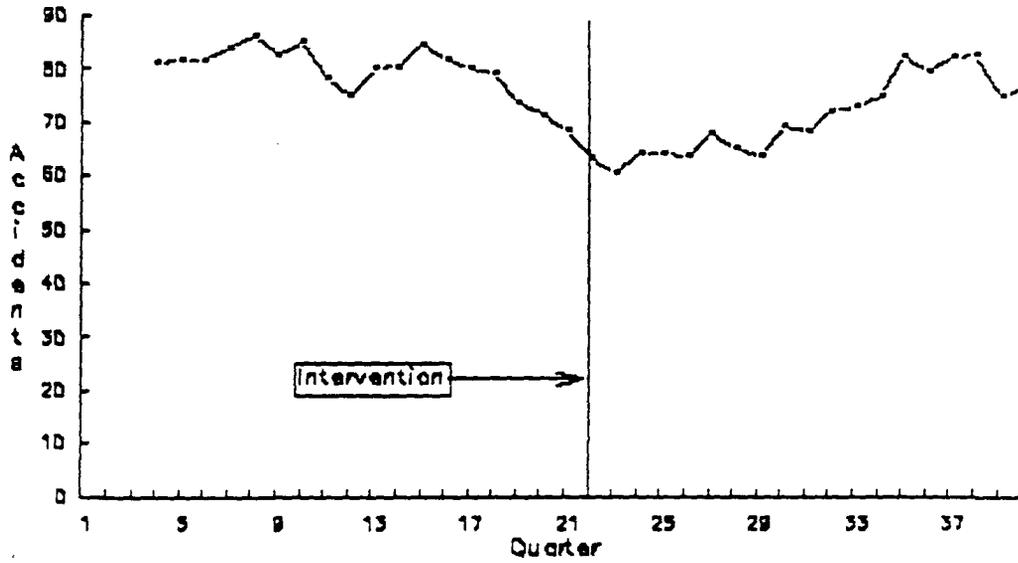


Figure 2-5: Daytime Multi-Vehicle Fatal Accidents In Tennessee Annual Moving Averages

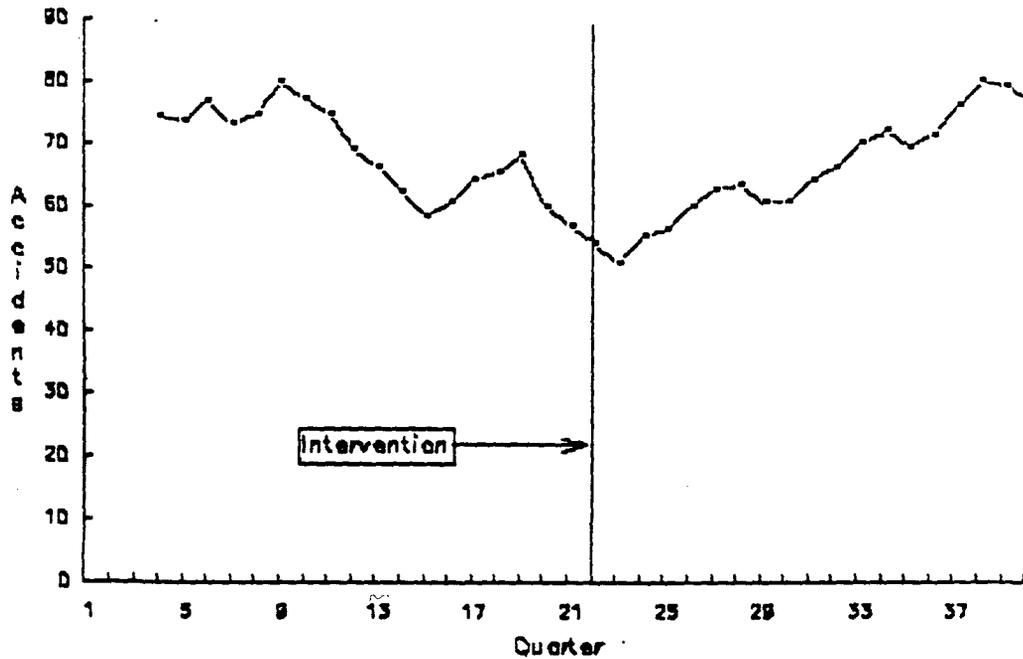
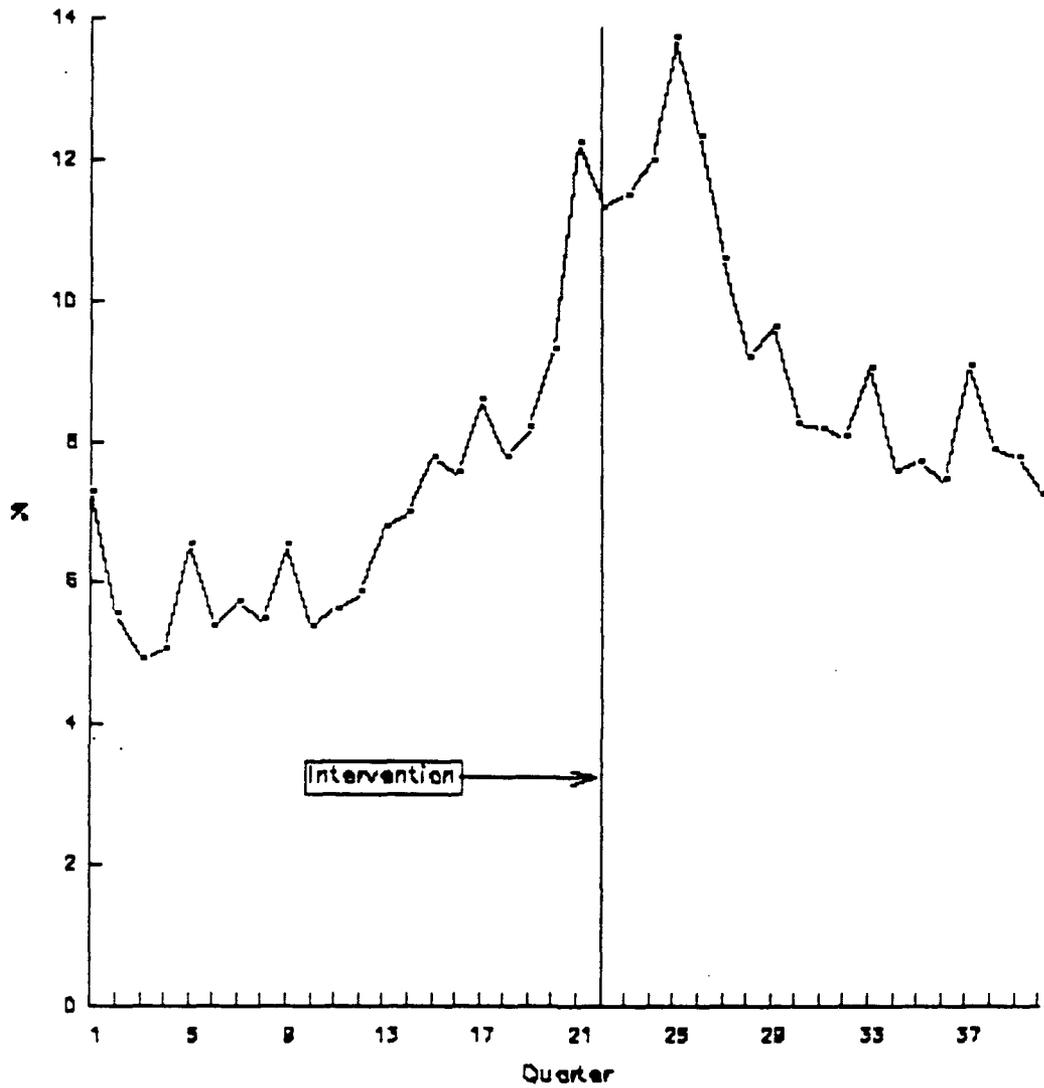


Figure 2-6: Percent Unemployment In Tennessee



A comparison of Figures 2-2 and 2-4 shows that before the intervention, there was no similarity in the patterns of nighttime single-vehicle fatal accidents and daytime single-vehicle fatal accidents. This rules out the use of daytime single-vehicle fatal accidents as a control group.

A comparison of daytime multivehicle fatal accidents and nighttime multivehicle fatal accidents (Figures 2-3 and 2-5) during the pre-intervention period shows some initial similarities. There is an increase until a peak is reached between the 7th and 8th quarter. A decline follows, which slows down around the 13th quarter. Thereafter, no similarity is apparent. After the intervention, nighttime multivehicle accidents stay essentially level, whereas daytime accidents increase rapidly. On the basis of the initial similarity, one might speculate that nighttime multivehicle fatal accidents would also have increased again without the intervention.

To explore this hypothesis, we fitted regressions to nighttime multivehicle fatal accidents as a dependent variable, and to several independent variables, including daytime multivehicle fatal accidents, for the period up to the 22nd quarter. Contrary to the expectation, the coefficient never even approached significance; it even had the "wrong" sign. This shows that linear functions can not adequately model the similarities which are visually apparent. Unfortunately, there are not enough data for nonlinear models.

Only when the constant term was suppressed (this was highly significant in all the models explored) did daytime multivehicle fatal accidents become significant. We found that the results suggested that, for the period from the 30th to the 38th quarter, the actual values were about 5 to 10 per quarter below the expected. This finding, however has to be considered as speculative. Suppressing a significant intercept is valid only if strong theoretical arguments require this; otherwise, it can give wrong results.

Since daytime accidents in Tennessee provided no convincing control group, we looked at the control states. Comparing daytime multivehicle fatal accidents (Figure 2-5) with those in the control states (Figures 2-7 and 2-8), we find a generally similar pattern for Alabama, although there are large deviations in the detail. The Kentucky pattern shows only a slight similarity; the main difference is the lack of the rapid increase in the most recent quarters. Daytime single-vehicle fatal accidents in Tennessee (Figure 2-4) show a general similarity with those in Alabama (Figure 2-9), but only a weak similarity with those in Kentucky (Figure 2-10). Here, the main difference is that the minimum is reached much later in Kentucky than in the other states. Thus, the comparison of daytime accident patterns suggests that Alabama is a suitable control state, but that Kentucky is not.

Figure 2-7: Daytime Multi-Vehicle Fatal Accidents In Alabama  
Annual Moving Averages

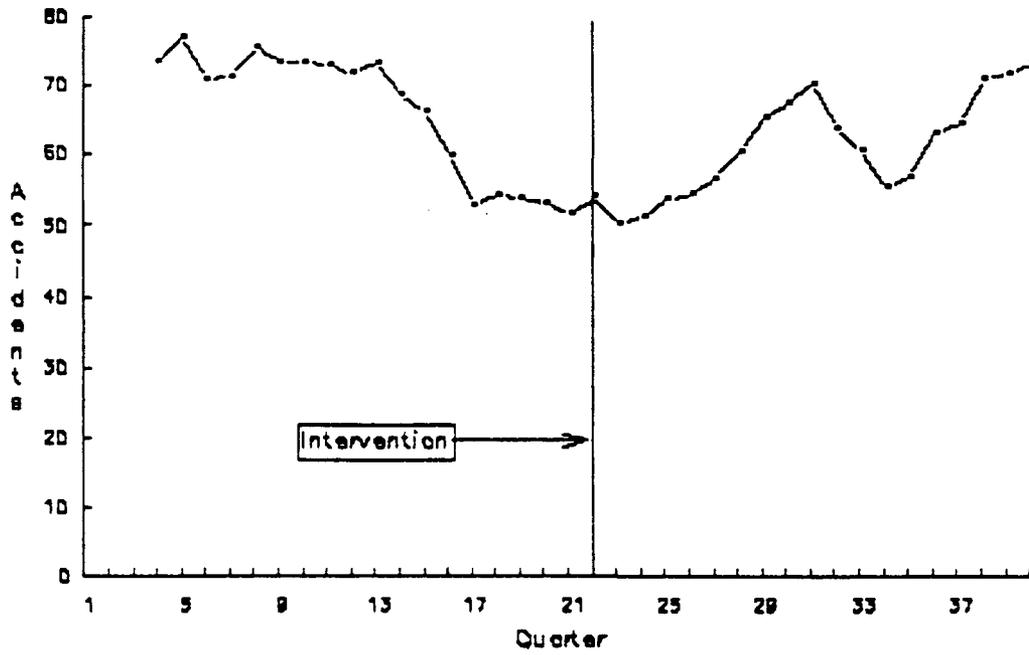


Figure 2-8: Daytime Multi-Vehicle Fatal Accidents In Kentucky  
Annual Moving Averages

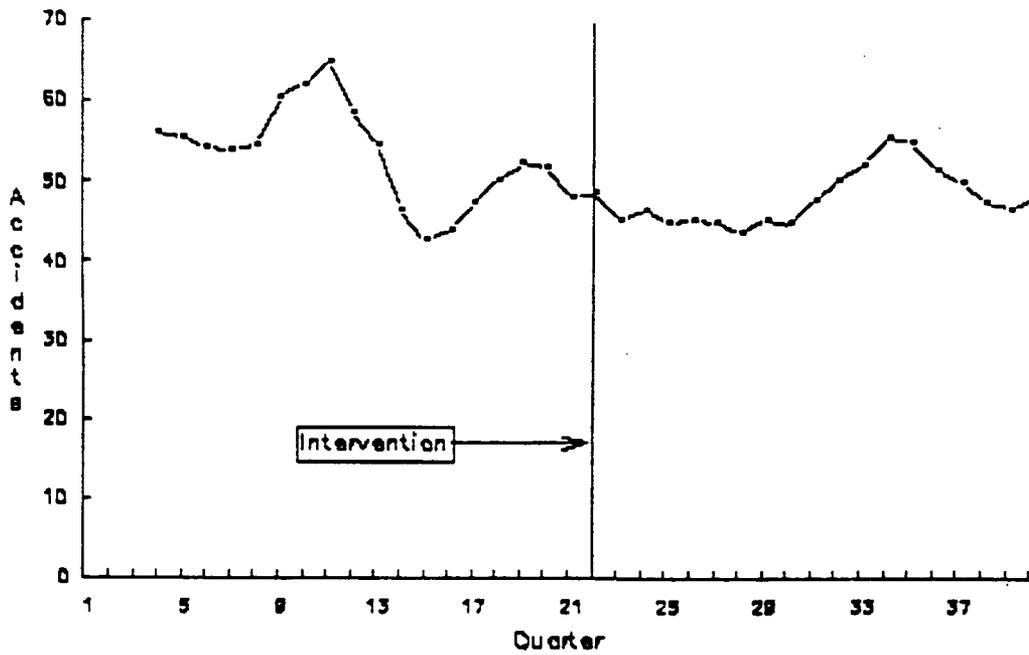


Figure 2-9: Daytime Single-Vehicle Fatal Accidents In Alabama  
Annual Moving Averages

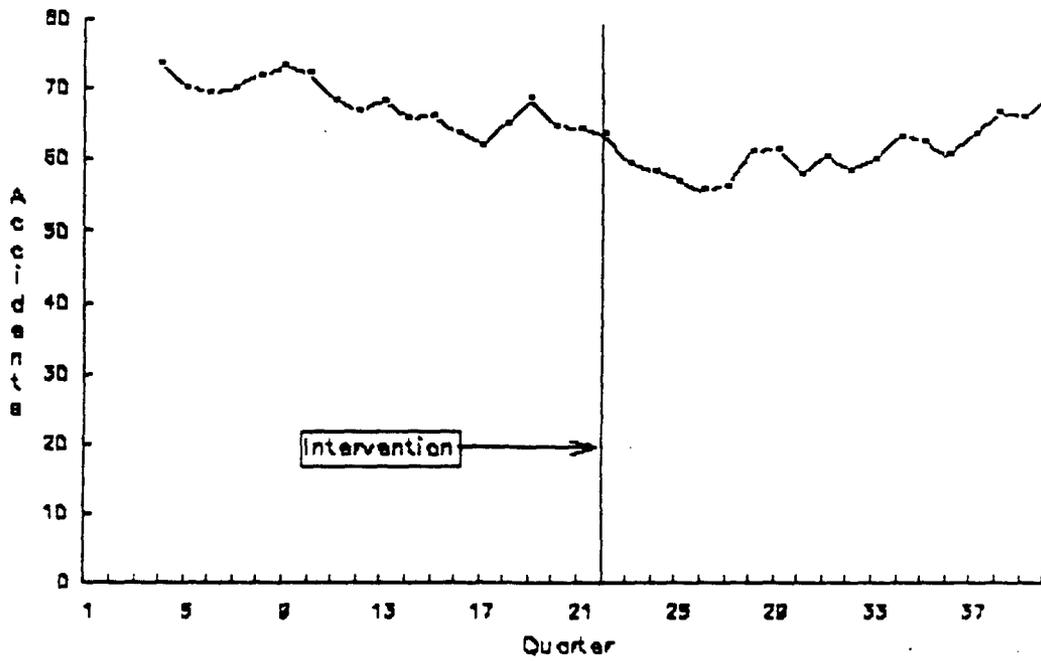
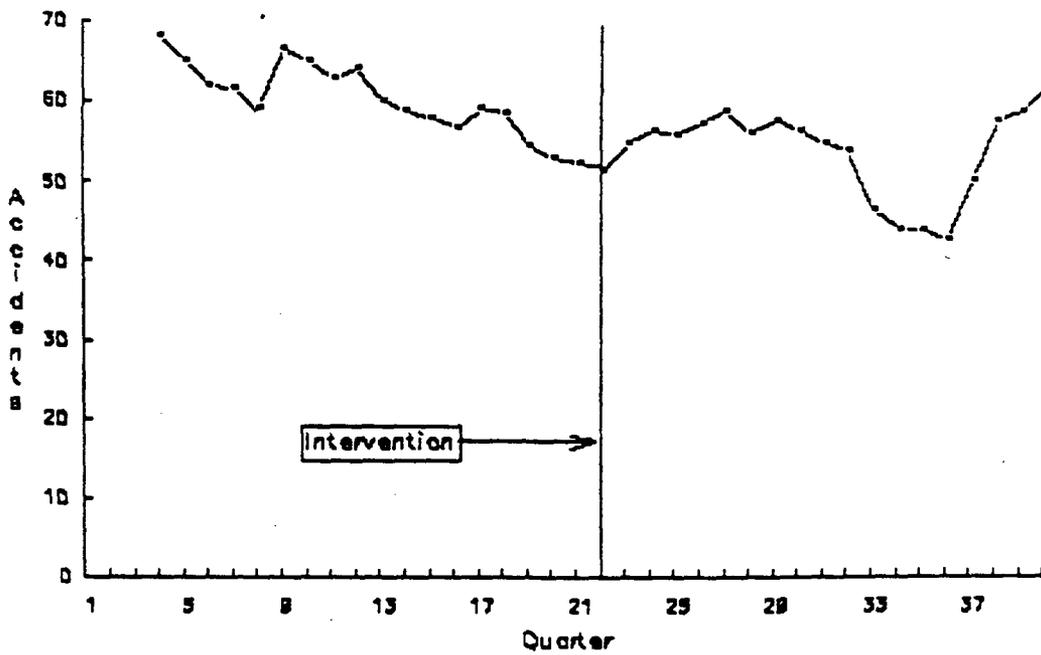


Figure 2-10: Daytime Single-Vehicle Fatal Accidents In Kentucky  
Annual Moving Averages



Comparison of multivehicle fatal accidents at night shows that Kentucky (Figure 2-11) is different from both Tennessee (Figure 2-3) and Alabama (Figure 2-12). Kentucky shows a steady downward trend, whereas the other states show an increase until the 7th quarter, a decline thereafter until the 17th or 18th quarter, and a leveling off or even a slight increase afterward.

Figure 2-11: Nighttime Multi-Vehicle Fatal Accidents In Kentucky  
Annual Moving Averages

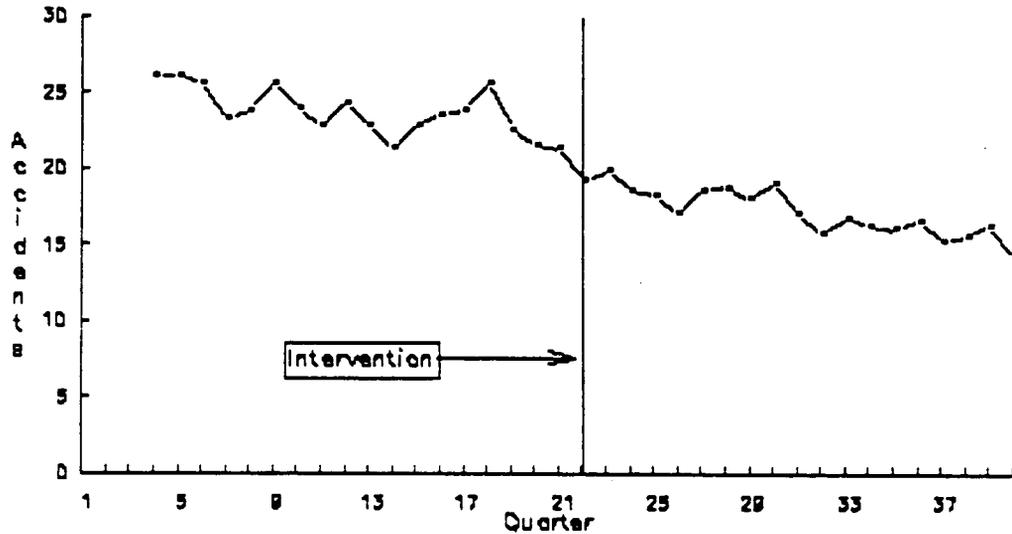
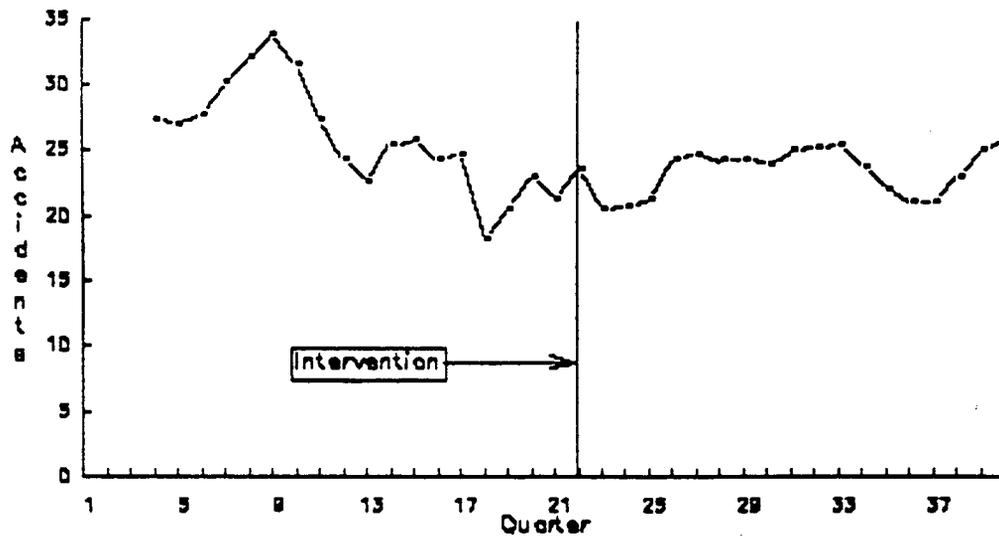


Figure 2-12: Nighttime Multi-Vehicle Fatal Accidents In Alabama  
Annual Moving Averages



A plot of the raw data for the nighttime single-vehicle fatal accidents in Kentucky (Y4K) suggests a slight upward trend before the intervention and a leveling off afterward (Figure 2-13). The Alabama time series (Y4A) shows no clear trends and no obvious changes from the "before" period to the "after" period (Figure 2-14). All three series have pronounced seasonal components.

Figure 2-13: Nighttime Single-Vehicle Fatal Accidents In Kentucky

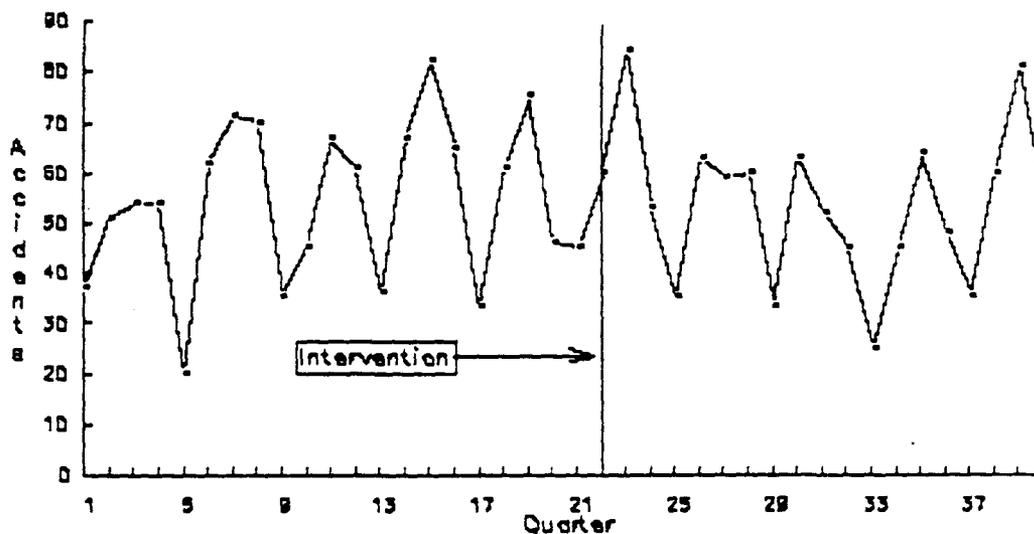


Figure 2-14: Nighttime Single-Vehicle Fatal Accidents In Alabama

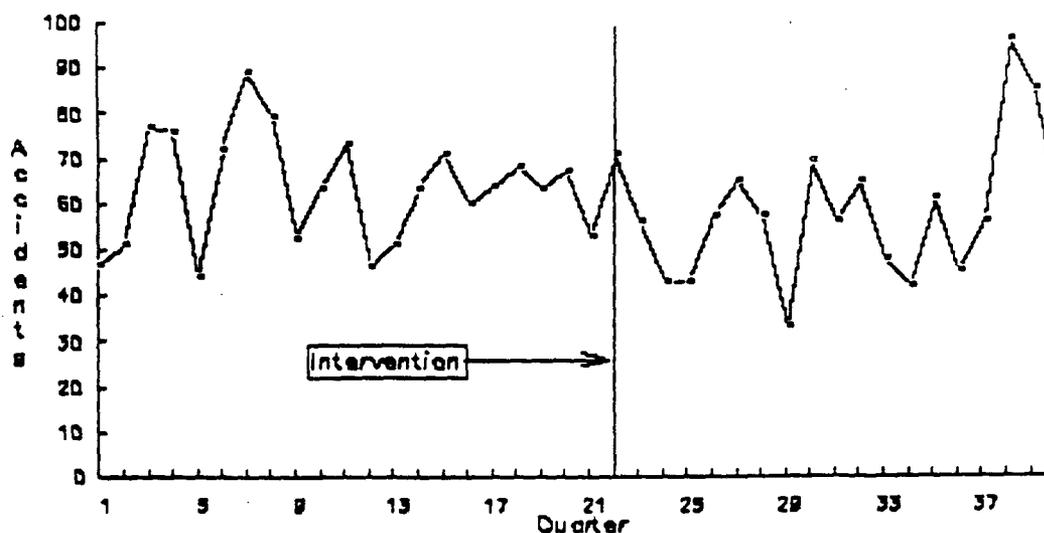


Figure 2-15: Nighttime Single-Vehicle Fatal Accidents In Alabama - Annual Moving Averages

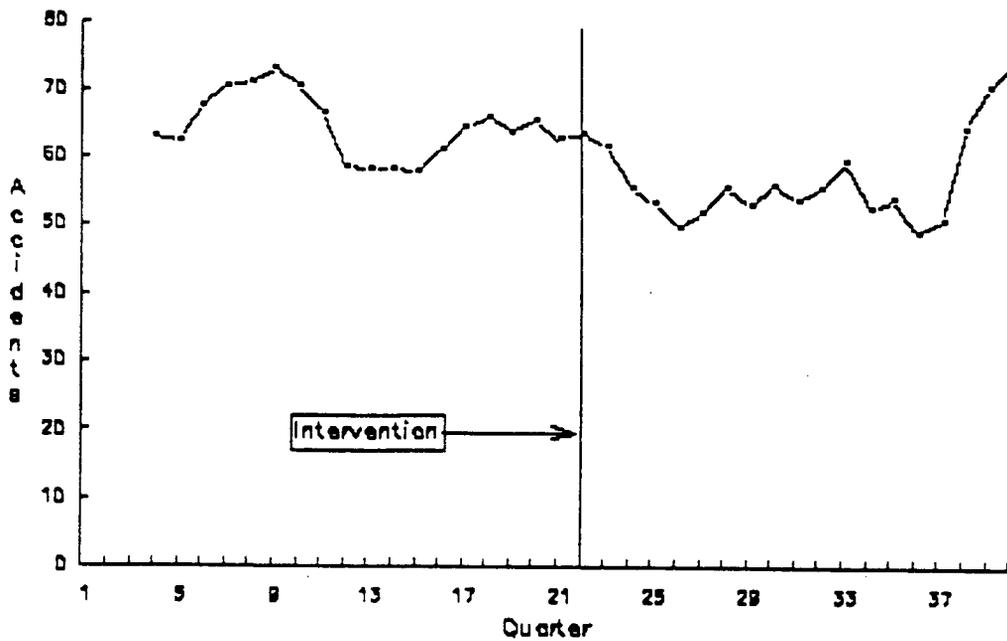
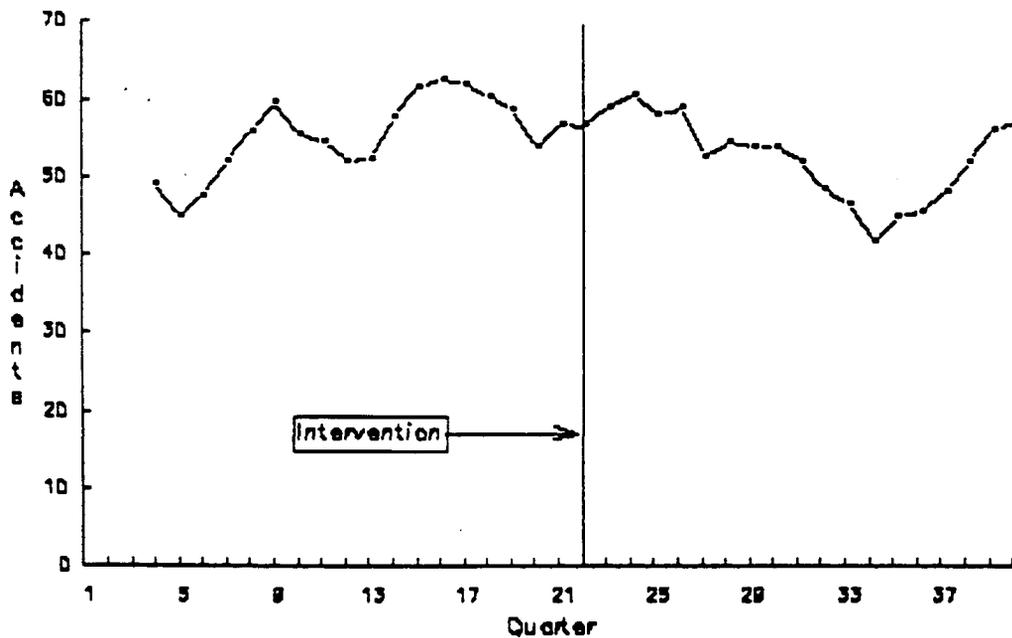


Figure 2-16: Nighttime Single-Vehicle Fatal Accidents In Kentucky - Annual Moving Averages



Looking at annual moving averages again, we note that for nighttime single-vehicle fatal accidents (Figures 2-2, 2-15, and 2-16), all three states show some similar features: higher values in the first part of the time period, lower values

in the second with a minimum around the 32nd to 34th quarter, and a rapid rise thereafter. This pattern is important, because it is what one would expect as result of the intervention, with the exception of the rise at the end. In the details of the series, Tennessee (Figure 2-2) and Kentucky (Figure 2-16) show more similarities: a slightly increasing trend during the first part of the period, and a rapid drop beginning at the 23rd or 24th quarter. Alabama (Figure 2-15) does not show these features, but it has another similarity to Tennessee, a rapid initial increase until the 7th or 8th quarter.

In sum, Alabama appears to be the better control state, but for single-vehicle nighttime accidents, Kentucky might be just as good.

Data from control states can be used in various ways. In the ideal case, a relation could be established between the accidents in the treatment state and in the control state for a period preceding the intervention. Possibly, this relation could include other factors that might change differently in the two states. Then, the control state's data (and the other factors, if any) could be used to predict what would have happened in the treatment state without the intervention, and the differences could be studied against the actual values. This would permit the estimation of not only the magnitude of an effect, but also its time pattern. In our case, this proved not to be feasible, because the time period before the intervention was too short, and the patterns not pronounced enough.

Another possibility is to use the entire time period, and to include an intervention variable which is 0 before, 1 after the intervention. This is acceptable if there is good reason to believe that the intervention has an immediate and constant effect, if any, and if no time trend is present: if the data show large fluctuations, a step function and a linear time trend are often not distinguishable. We chose a third approach. We established a relation between the data for the entire time series, and then examined the differences between the fitted and the actual data. If there is an intervention effect, these differences should be negative during the pre-intervention period, and become positive after the intervention, possibly with some lag, or a slow build-up.

We did this using Alabama and Kentucky as control states for nighttime single-vehicle fatal accidents, and Alabama only for multivehicle fatal accidents. In all cases, only the accidents in the control state and the seasonal factors were significant.

Figures 2-17 and 2-18 show the results for nighttime single-vehicle fatal accidents. Overall, there is no indication of the expected pattern. However, it is possible to isolate a short time period, from the 26th through the 36th quarter, and show that the actual number of accidents were, on the average 5 or 6 lower than expected. Comparing this with the standard error of 3 for the average of 11 predicted values, it might be argued that this reduction is significant. However, this would not be correct. We have looked for a group of points with the largest average positive deviation. In such a situation standard tests are not valid. Therefore, we must conclude that there is no recognizable effect of the intervention.

Figure 2-17: Residuals of Y4T Modeled as a Function of Y4A and Seasonal Adjustments

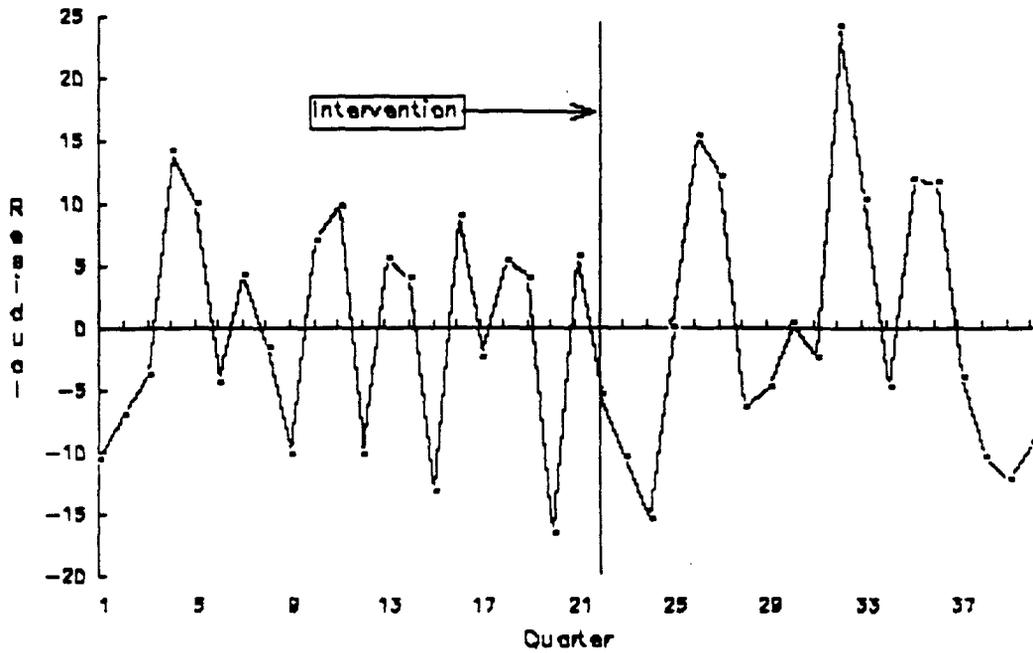


Figure 2-18: Residuals of Y4T Modeled as a Function of Y4K and Seasonal Adjustments

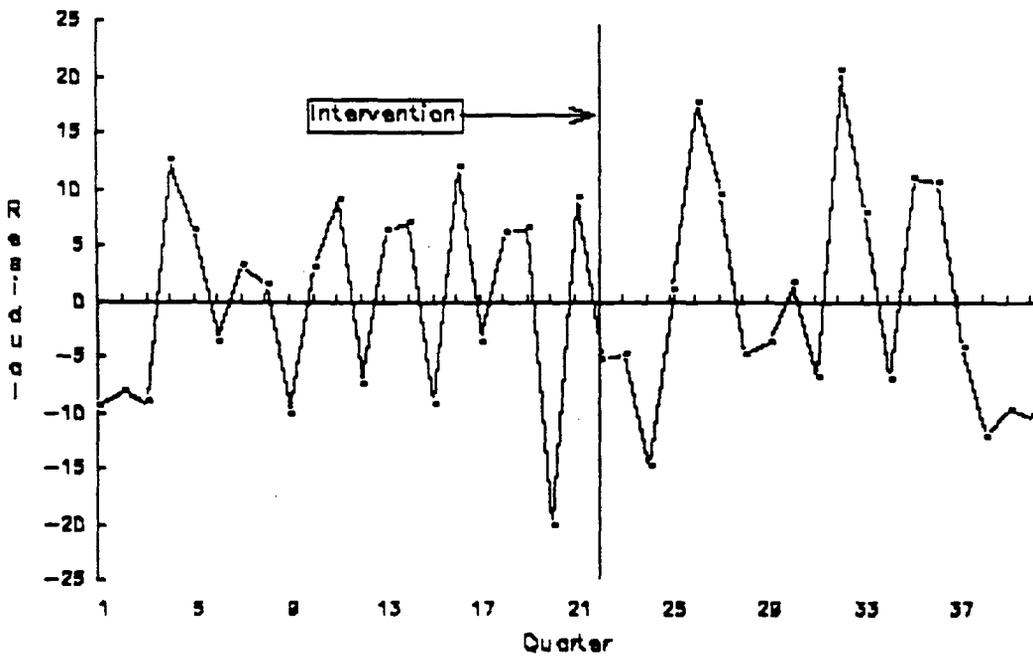
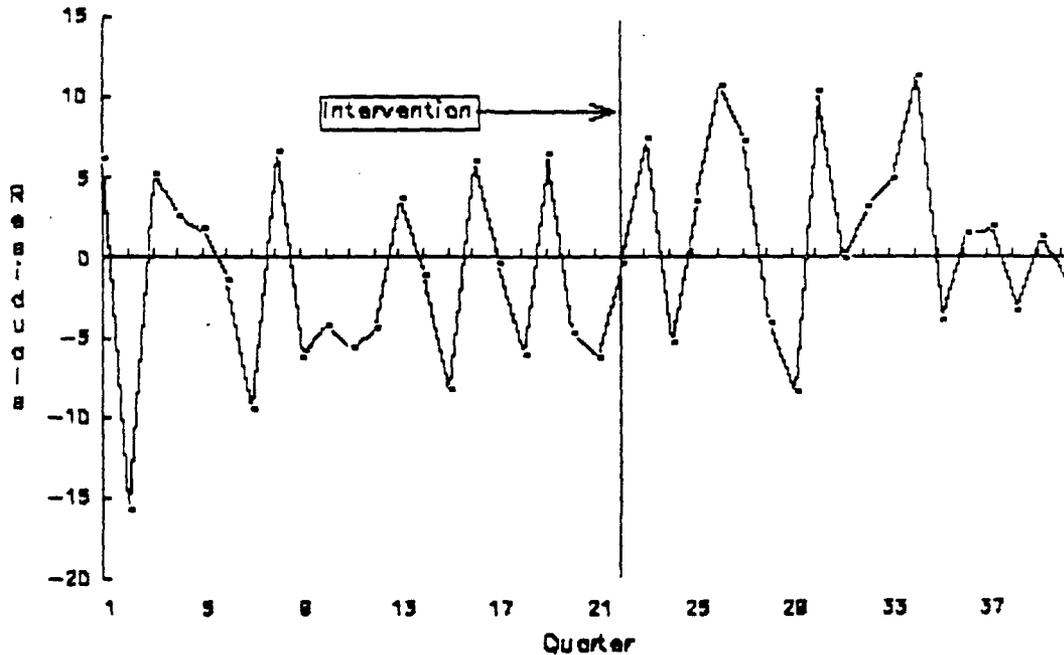


Figure 2-19 shows the results for nighttime multivehicle fatal accidents in Alabama. Here a clear pattern is present. The post-intervention residuals show an increasing trend which ends abruptly in the 34th quarter. The average residual for the pre-intervention period is -1.7, for the intervention period +2.0. With standard errors of 1.4 and 1.5 they are not quite significant (and the two deviations are not independent). Because of the indication of a time trend, and the lack of significance, it cannot be concluded that there was an effect.

However, if the time period from the 25th through the 34th quarter is examined, then an average positive residual can be found, and this residual is significant. Comparing these observations with Figure 2-7 which is based on a speculative model, it is found that this residual trend is compatible with the hypothesis that there were lower than expected multivehicle fatal accidents at night.

Figure 2-19: Residuals of Y3T Modeled as a Function of Y3A and Seasonal Adjustments



An analysis using linear relations may miss nonlinear patterns. Therefore, we used a heuristic technique to look for such patterns. A standard approach is to look at a scattergram of the treatment versus the control variable, distinguishing the pre- and post treatment periods. In our case, the scatter of the points is very large, and the seasonal variations complicate the picture. Therefore, we used four-quarter moving totals. This eliminates seasonal variations and reduces scatter, but creates dependencies among the data points. This can obscure some patterns, and exaggerate other patterns.

Figure 2-20 shows nighttime multivehicle fatal accidents versus daytime multivehicle fatal accidents. A regression analysis gave a nonsignificant negative regression coefficient, which corresponds to the pattern of the points: those on the left are, on the average, slightly higher than those on the right. The regression with a suppressed intercept forced a line through the points, and this clearly does not reflect their pattern. However, it does roughly divide the points before the intervention, and those after the intervention. Figure 2-20 shows clearly, that after the intervention, nighttime multivehicle fatal accidents were lower than before, for the same level of daytime multivehicle fatal accidents. This strengthens the earlier speculative finding.

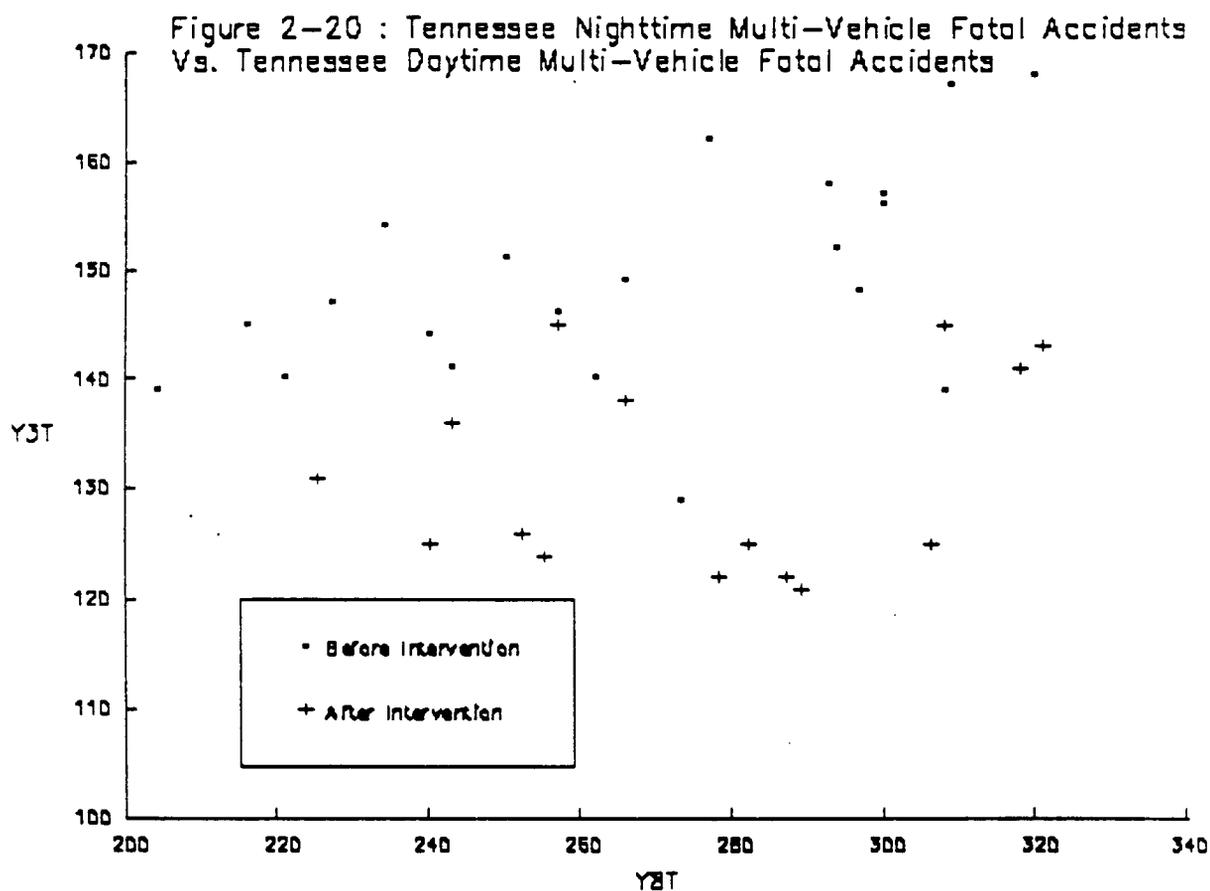
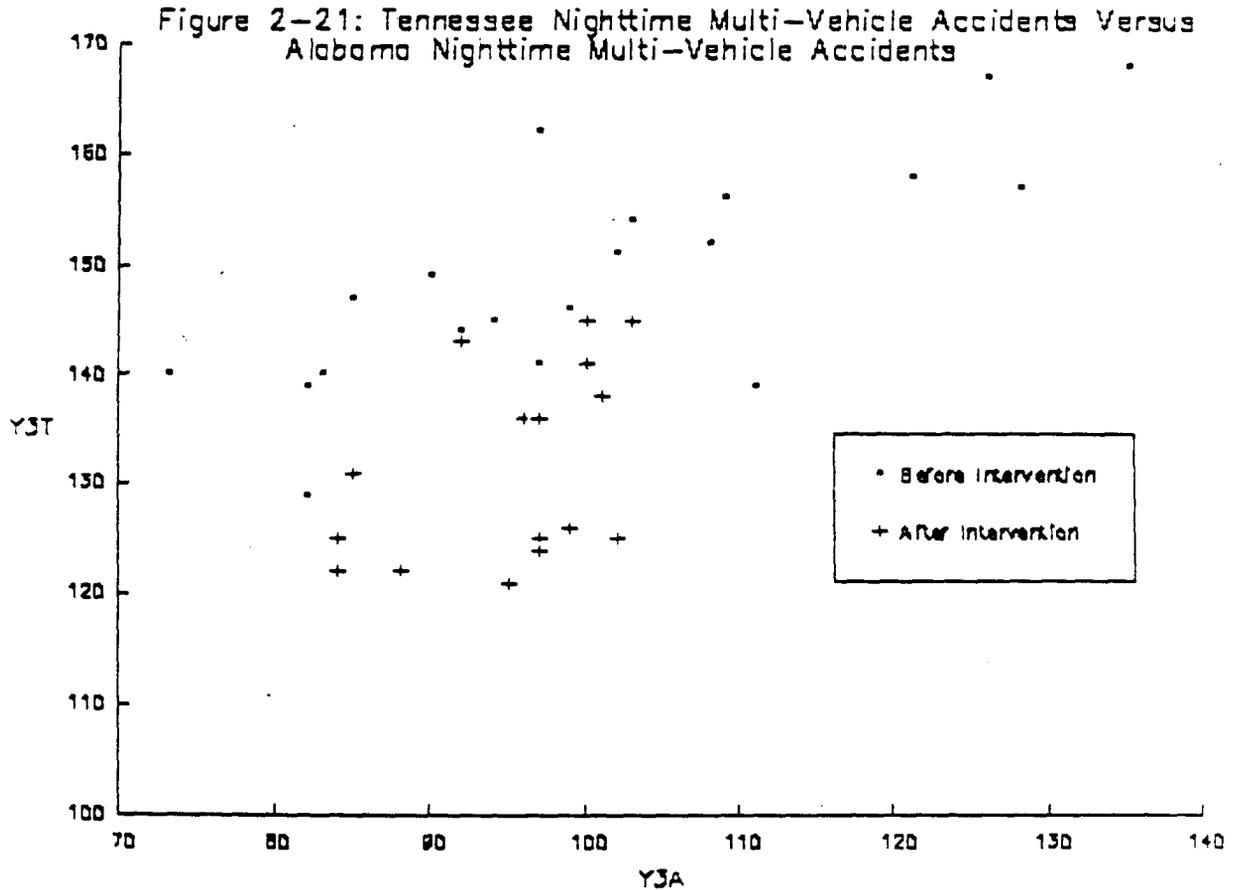


Figure 2-21 uses nighttime multivehicle fatal accidents in Alabama as a control group. The pattern is similar to that of Figure 2-20: for a given number of accidents in the control state, the number of accidents in the treatment state was lower after the treatment than before. This strengthens the previous findings.



Figures 2-22 and 2-23 show nighttime single-vehicle fatal accidents with Alabama and Kentucky as control states. The points for the "after" period center to the left and slightly below those for the "before" period. During the "before" period, there is little, if any, relation between the treatment and the control states. During the "after" period, there is a slight positive relationship. Although the "after" points are, on the average, slightly below the "before" points, there is no consistent difference: for higher values in the control states, the "after" accident numbers tend to be higher than the "before" numbers. For low values in the control states, the difference is reversed. It could also be that there are slightly nonlinear relationships with only random differences between the "before" and "after" periods.

Figure 2-22: Tennessee Nighttime Single-Vehicle Fatal Accidents Vs Alabama Nighttime Single-Vehicle Fatal Accidents

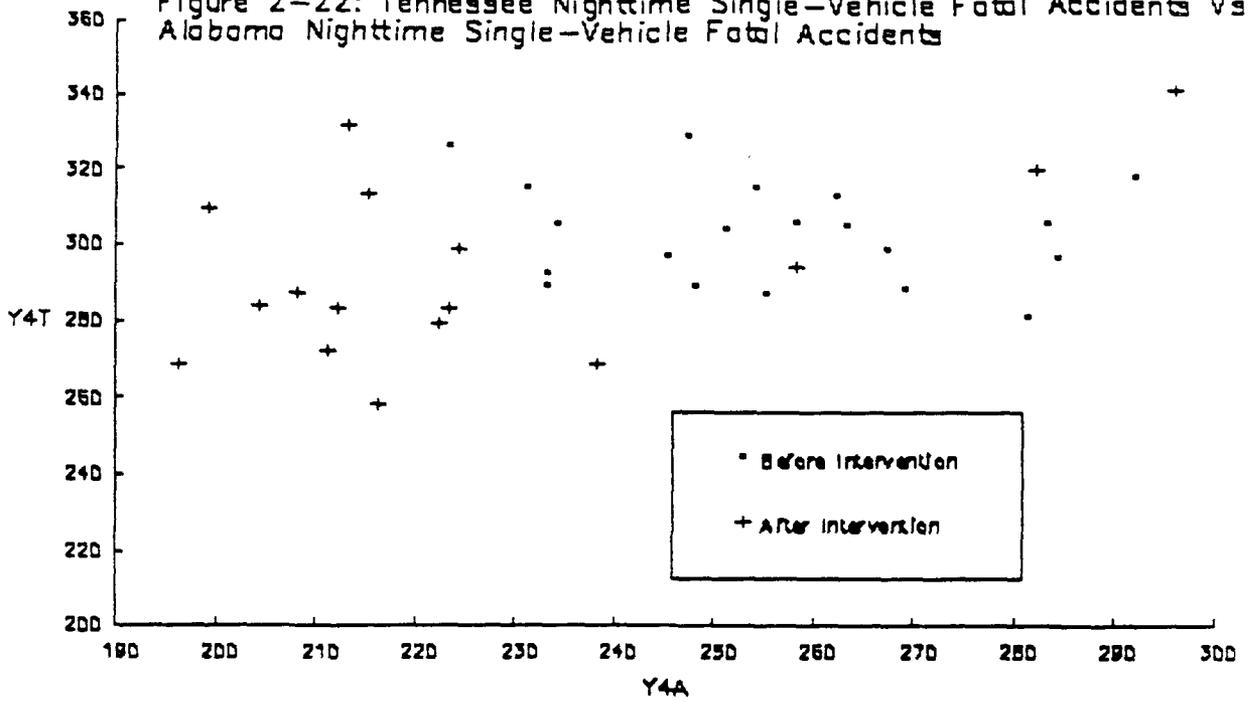
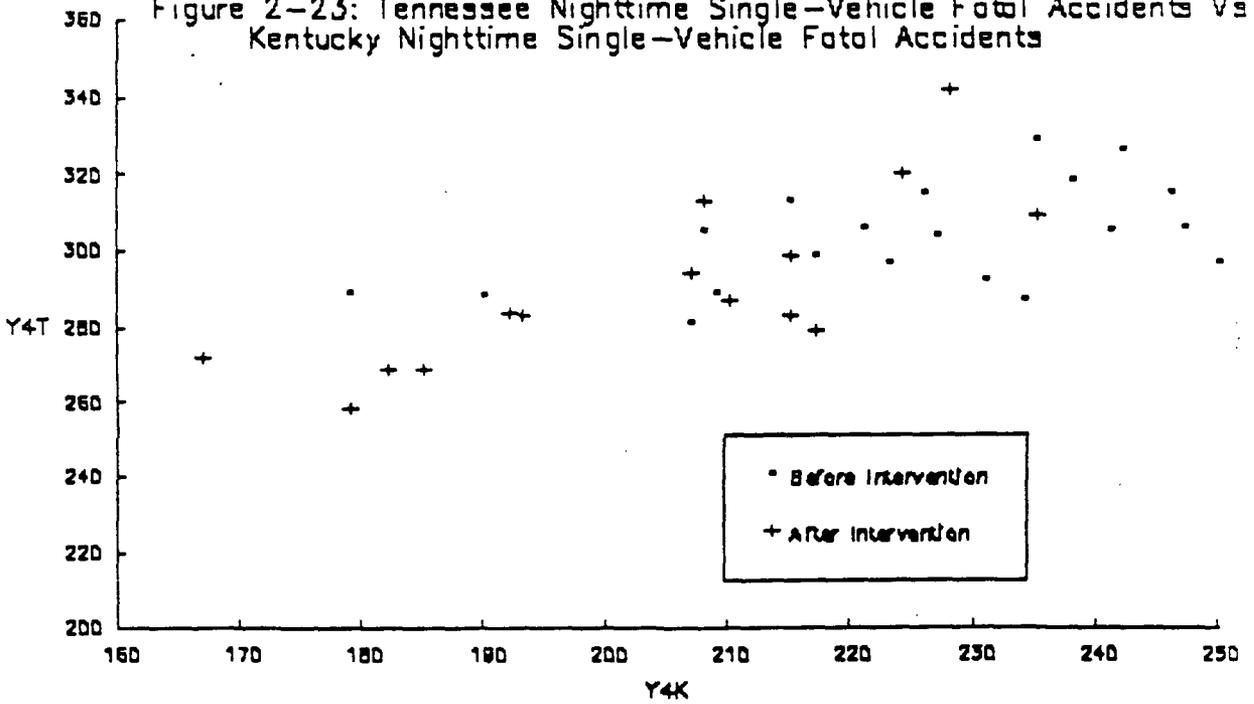


Figure 2-23: Tennessee Nighttime Single-Vehicle Fatal Accidents Vs Kentucky Nighttime Single-Vehicle Fatal Accidents



In sum, Figures 2-22 and 2-23 do not support any conclusions that nighttime single-vehicle fatal accidents in Tennessee were lower than to be expected from the pattern in the control states.

A more formal examination of these fatal-accident time series was performed using linear and log-linear regression models. The basic model incorporated dummy seasonal-adjustment variables and a shock variable in the form of a 0-1 pulse function. The shock variable was designed to be equal to zero before the intervention (and, in some cases, for a short period after the start of the intervention), and to be equal to 1 for some period during the intervention.

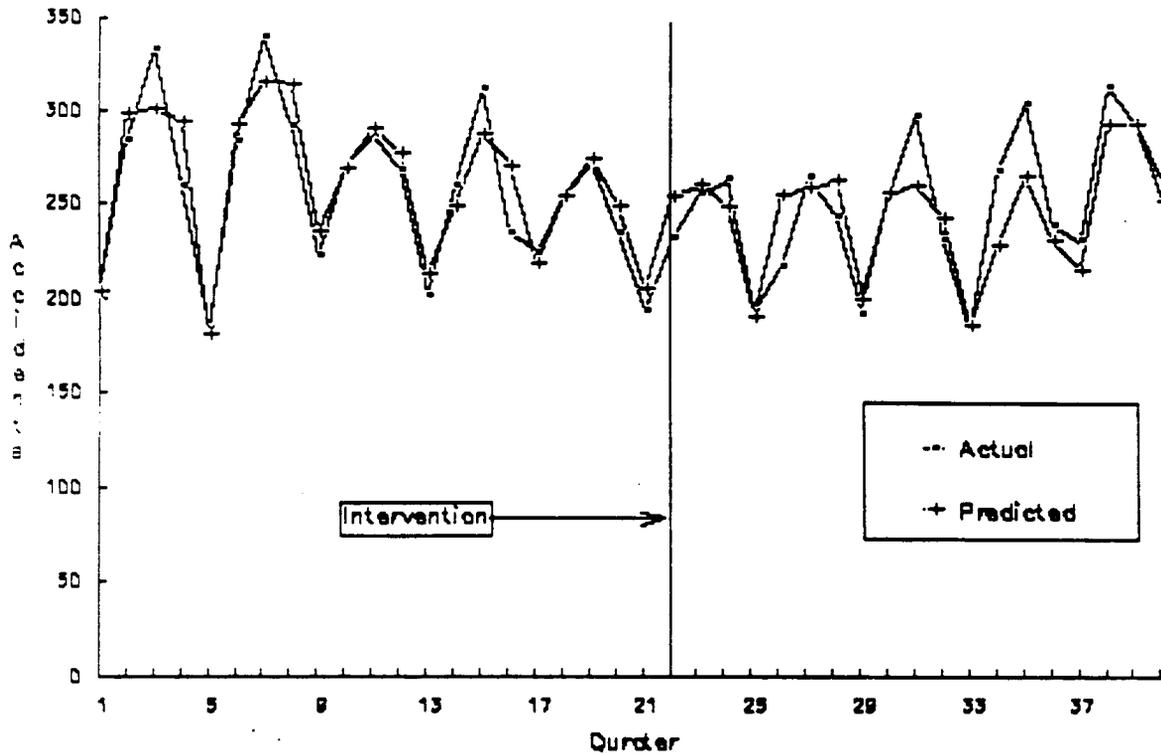
For Tennessee, the best fits for both the linear and the log-linear model were obtained with seasonal adjustments at the second, third, and fourth quarters and a 0-1 step function beginning with the third quarter of 1982 and continuing through the first quarter of 1984. The three seasonal-adjustment variables were highly correlated with nighttime single-vehicle fatalities ( $p < .002$ ,  $R=.78$ ), but the shock variable was not. However, the coefficient of the shock variable was negative, indicating a possible small, but statistically insignificant, reduction in nighttime single-vehicle fatalities during the intervention. Similar results were obtained for Kentucky and Alabama.

Different results were obtained for the other surrogates of alcohol-related accidents. For nighttime fatalities, there was a highly significant correlation with seasonal variables for all three states (true for all of the surrogates studied). There was no significant correlation with the shock variable for Tennessee, but there was a larger negative coefficient than for nighttime single-vehicle fatalities. By contrast, there was a significant (negative) correlation with the shock variable for both Kentucky and Alabama. The best shock variable for Kentucky was one that continued on with a "1" value through the end of the time series (fourth quarter of 1986) rather than becoming zero at the second quarter of 1984, and this was true for all of the surrogates examined.

For single-vehicle fatalities, there was a significant correlation with the shock variable for Tennessee as well as for Kentucky and Alabama. The correlation coefficient for Tennessee was higher than it was for nighttime fatalities (.85 compared to .75). For the other two surrogates of alcohol-related accidents, all fatalities and daytime fatalities, the findings were very similar to those for single-vehicle fatalities.

Taken at face value, and considering Tennessee alone, these findings suggest that a reduction in alcohol-related fatal accidents of up to 15% could be attributed to mandatory jail. However, similar reductions also occurred in Kentucky and Alabama which had no mandatory jail law. In fact, there was a high correlation between Tennessee and the two comparison states for the surrogates studied here. Regression analyses showed a significant correlation between Tennessee and Kentucky for all of the alcohol-crash surrogates, and a significant correlation between Tennessee and Alabama for all fatalities and daytime fatalities. Multiple correlation coefficients for Tennessee modeled as a function of Kentucky and Alabama ranged from .7 to .9. Plots of predicted and actual values for all fatalities resulting from this analysis are shown in Figure 2-24.

Figure 2-24: Actual and Predicted Values of All Fatal Accidents in Tennessee Modeled as a Function of All Fatal Accidents in Alabama and Kentucky



The above analyses have ignored factors other than mandatory jail that could influenced fatal crashes. For example, as indicated above, strong economic factors were at play at precisely the time that mandatory jail was adopted in Tennessee. One measure of the status of the economy, unemployment, is plotted again versus time in Figure 2-25, this time with the shock variable superimposed. A correlation between the two is suggested, and a regression analysis showed this to indeed be the case ( $R = .71, p < .0005$ ). Modeling all fatals as a function of the three seasonal adjusters and unemployment results in the same highly significant correlation as was obtained with the shock variable substituted for unemployment ( $R = .89, p < .0005$ ). Predicted and actual values from this analysis are illustrated in Figure 2-26.

Figure 2-25: Percent Unemployment in Tennessee

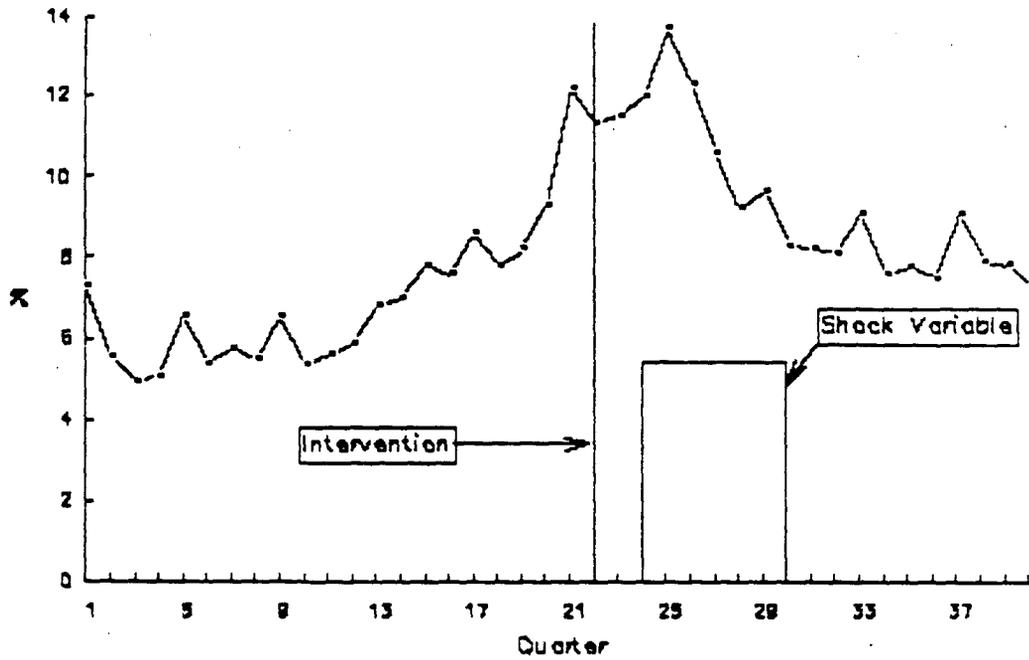
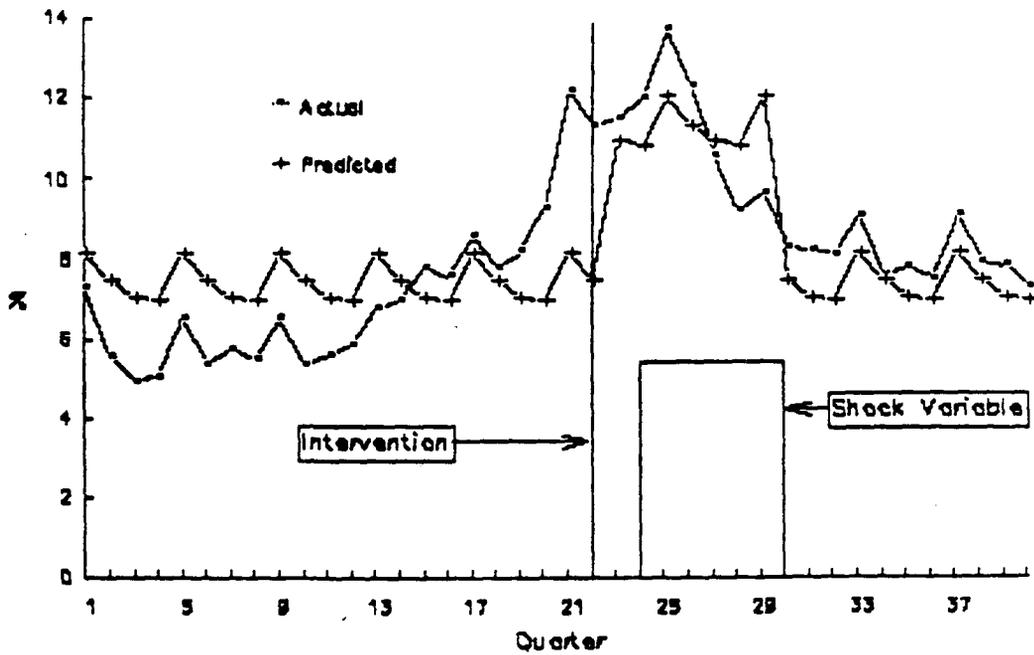
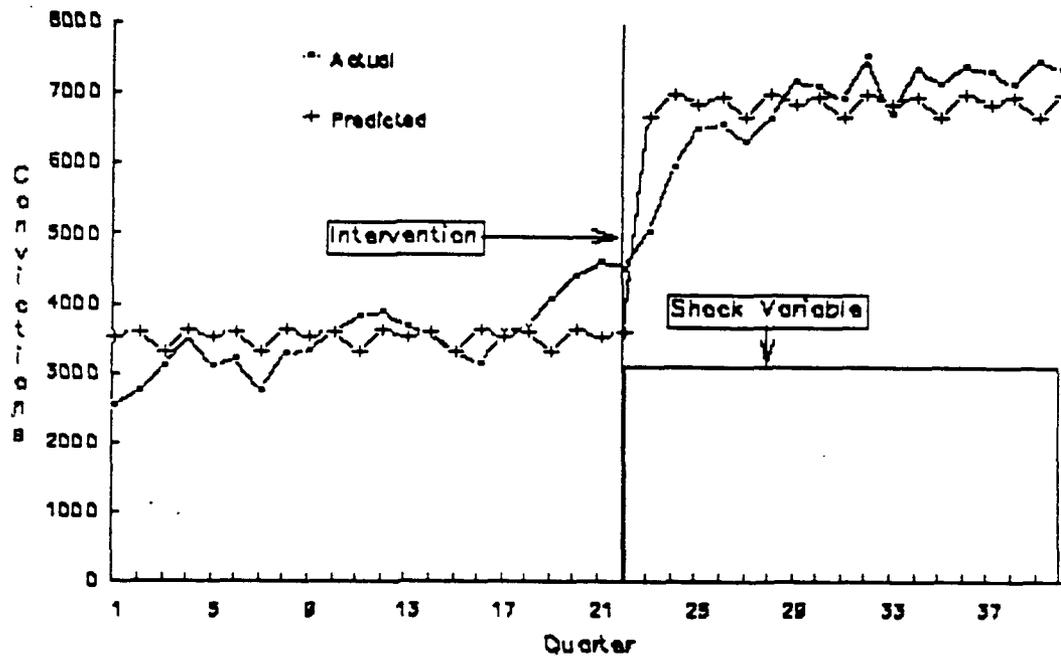


Figure 2-26: Predicted and Actual Percent Unemployment in Tennessee



We had speculated that convictions for drunk driving might decrease because drivers who might otherwise have pleaded guilty to DUI might not "plead out" for fear of a jail sentence, and because of a failure of juries or judges to convict drivers who pleaded not guilty. Actually, the reverse appeared to have happened. As shown in Figure 2-27, convictions doubled after the intervention, rising from about 3000 per quarter to about 6000 per quarter. The change was statistically significant ( $R = .91$ ,  $p < .0005$ ). Thus, it cannot be said that the new law had no significant effect because of a failure to convict drunk drivers.

Figure 2-27: Predicted and Actual DUI Convictions in Tennessee



In summary, no decrease in alcohol-related fatal accidents that could reasonably be attributed to mandatory jail could be found. The most reliable single-variable surrogate, nighttime single-vehicle fatal accidents, showed essentially no correlation with the intervention. There is a possibility that nighttime multivehicle fatal accidents were lower after the intervention than one would expect from the trends in the control states. However, the fact that the control states also showed lower fatal accident numbers during the post intervention period should caution against any but very tentative conclusions. It appears also worthwhile to explore the reasons for this phenomenon in future studies.

In addition to the findings relating to the purpose of the study, we made a few other important observations. One is that daytime fatal accidents are not necessarily a good control group for the study of nighttime fatal accidents because they are affected quite differently by economic factors. Another finding is that great care must be exercised when selecting control states: similarity is

not sufficient. The suitability of a state as a control state has to be established by a study of accident patterns. Finally, there was a common drop of nighttime fatal accidents in the three states in the latter part of the study period, and the rapid increase toward the end. The reason for this also is worth further study.

## 2.2 Driver Survey

This survey was conducted by the Tennessee Department of Safety (DOS) at driver license stations across the state. The objectives of the survey were:

- To determine public's awareness of the existence and provisions of the mandatory jail sanction;
- To determine the public's perception of the likelihood of imposition of the sanction, and of its severity and swiftness; and
- To determine the extent to which the sanction has deterred them from DUI.

The survey was conducted in two phases:

- Phase I - Preliminary Survey of Public Awareness,
- Phase II - Full-Scale Survey of Public Awareness, Risk Perception, and Self-Reported Behavior.

2.2.1 Phase I Survey - Approach. The Phase I survey was conducted in the Spring of 1985 and had the purpose of determining whether public awareness of the jail sanction was low enough to warrant a PI&E campaign. Two questionnaires were tested by the Tennessee Department of Safety (DOS) in three driver licensing stations in Davidson County, Tennessee, the county in which Nashville is located. Drivers who came to the stations to have their photos taken for their driver's license were given the questionnaires and asked to complete them while waiting for their photos to be processed. The license stations were located in west Nashville (Station 213), east Nashville (Station 215), and north Nashville (Station 223).

One of the questionnaires (called the "blue" version because it was printed on blue paper) asked the respondents whether there were any mandatory penalties for first-offense DUI and, if so, to identify the penalties and to indicate the percentage of convicted DUIs who actually receive the penalties. The second questionnaire (the "yellow" version) was closed-ended and asked respondents to check the appropriate box indicating the percentage of convicted DUIs who actually receive a two-day jail sentence for DUI.

The questionnaires were completed during the first two weeks of April 1985. The responses were coded and entered into the University of Michigan mainframe computer by Mid-America staff for analysis using the SAS statistical package.

A total of 390 responses were received, 191 for the blue questionnaire, and 199 for the yellow questionnaire. Only three of the persons asked to complete the questionnaires refused to do so. The Tennessee Department of Safety reported no logistical or other difficulties in administering the survey.

2.2.2 Phase I Survey - Results. About 80% of the 191 blue-form respondents said there were mandatory penalties for first-offense drunk driving. There was no statistically significant difference in awareness of mandatory penalties with respect to sex, age, or drinking frequency.

More than 51% of all the respondents said there were mandatory jail penalties for first-offense drunk driving. There was no significant difference in awareness of mandatory jail with respect to age, sex, or type of questionnaire, but there was a significant difference with respect to drinking frequency. Seventy-nine percent of those who drank at least once a week said there was mandatory jail, compared to 43% who drank less frequently than once a week.

The respondents estimated that, on the average, about 50% of drivers convicted of drunk driving actually received a jail penalty. This figure was not much higher for the more frequent drinkers. There was no significant difference in percentage of convicted drivers going to jail between blue-form and yellow-form respondents. There was also no large difference with respect to sex, age, or drinking frequency. The average value of the length of the jail sentence given first offenders was about 12 days (data from yellow form only).

We concluded that either form could be used to obtain useful data on driver awareness of the existence and use of mandatory jail. We recommended the use of the blue-form approach because it gives more information on sanctions of all types and is less subject to possible bias due to indicating jail as a possible penalty in the questionnaire.

We found that driver awareness of mandatory jail in Davidson County was quite high, but that there was considerable skepticism that first offenders are actually going to jail. This was true for the more frequent drinkers as well as the less frequent drinkers. We therefore recommended that work begin on a PI&E campaign to raise the perception that drunk drivers actually go to jail in Tennessee.

2.2.3 Phase II Survey - Approach. The Phase II survey was conducted during the Fall of 1985 before the implementation of a PI&E campaign designed to increase the public's awareness of mandatory jail. As with the Phase I survey, it was conducted in driver-license stations, but was not restricted to Davidson County. Drivers coming to the station to have their picture taken for their drivers license were asked to complete a short two-page questionnaire (see Appendix). The stations were located in four major population centers (i.e., Davidson, Hamilton, Shelby, and Knox), and nine smaller counties chosen to permit statewide estimates of awareness to be made. A total of 2900 questionnaires were distributed.

2.2.4 Phase II Survey - Results. Preliminary analyses of the survey data were conducted. A total of 2758 completed questionnaires were received out of the targeted number of 2900. This amounts to an overall return rate of about 95%. Actual numbers of responses versus targeted numbers of responses for the various stations are indicated below.

	Station	Quota	Actual
West:	101. Shelby (Summer)	250	241
	103. Shelby (Whitehaven)	190	191
	105. Shelby (Millington)	60	57
	133. Madison (Jackson)	200	191
	141. Chester (Henderson)	50	47
	151. Hardin (Savannah)	100	100
Middle:	209. Dickson (Charlotte)	150	149
	211. Humphreys (Waverly)	50	48
	213. Davidson (West)	150	145
	215. Davidson (Southeast)	300	274
	223. Davidson (Goodlettsville)	50	49
	260. Wayne (Waynesboro)	50	46
East:	309. Morgan (Wartburg)	50	50
	315. Knox (5th Avenue)	250	240
	317. Knox (Pedigo)	250	249
	337. Bradley (Cleveland)	150	150
	343. Hamilton (Chattanooga)	500	423
	361. Greene (Greeneville)	100	100
Miscoded:	--	8	
Total	2900	2758	

About 50% of the respondents were male, and the average age of the respondents was 29.7 years with a standard deviation of 14.9 years.

The respondents indicated a high awareness of mandatory sanctions for first-offense DUI - 67.6% of the 2758 drivers submitting questionnaires and 78.1% of those responding to the awareness question said there were mandatory penalties.

Jail was listed as a mandatory penalty for first-offense DUI by 41% of all respondents and by 60% of respondents who were aware of mandatory penalties. A fine was the next most-mentioned penalty (31% of all respondents), and license action was listed by 25%. Some other penalty (e.g., community service) was listed by 10% of the 2758 respondents.

The mean value of the percentage of convicted DUIs believed to actually get a jail penalty was 45.2%. Corresponding figures for fines and license actions were 51.2% and 40.2%, respectively.

About 59% of those responding to the question about the effectiveness of the penalties they had listed thought the penalties were effective. Jail was listed most often as an effective penalty (42.4% of those responding to the question), followed by fines (27.6%) and driver license actions (24.6%).

PI&E messages with a jail theme were mentioned by only about 1% of the respondents. Television was by far the communications medium most remembered as a source of messages on drunk driving - 66.0% of the 2758 respondents listed television as a source. Radio, the second most-remembered source, was listed by only 6.7% of the respondents.

Of the 2758 respondents, 2455 (89.1%) reported their drinking frequency. Two percent of those reporting said they drank every day; 10% said they drank at least several times a week; and 23.5% said they drank at least once a week. Forty-four percent said they never drank.

About 50% of the respondents reported their frequency of driving after drinking. Of these, nearly 18% said they drove after drinking at least once a month, and 3.6% said they drove after drinking at least several times a week. Slightly more than one-half (54%) said they never drove after drinking.

About 24% of the respondents reported their frequency of driving after drinking enough to be legally drunk. About 12% of these said this frequency was at least once a month, and about 2% said it was at least several times a week. About 40% of those reporting drove while legally drunk at least occasionally.

Finally, 626 drivers responded to the question on how their frequency of driving after drinking had changed during the past six months. Only 19 (3%) said it had increased, 325 (52%) said it had decreased, and 282 (45%) reported no change. Increased enforcement, increased conviction probability, and stronger penalties were mentioned most frequently as reasons for a decrease in drinking driving.

We found, as expected, that the data were heavily biased toward young drivers (see Table 2-1). We developed some preliminary expansion factors based on data on the distribution of Tennessee licensed drivers and constructed a new dataset weighted by driver age (Table 2-2). We then used this new dataset to study some relationships among several critical variables.

Table 2-1 - Age Distribution of Drivers  
(Non-Weighted)

Age	Frequency	Cum Freq	Percent	Cum Percent
<=24	1072	1072	38.869	38.869
25 - 34	745	1817	27.012	65.881
35 - 44	519	2336	18.818	84.699
45 - 54	255	2591	9.246	93.945
55 - 64	122	2713	4.423	98.368
>=65	45	2758	1.632	100.000

Table 2-2 - Age Distribution of Drivers  
(Weighted)

Age	Frequency	Cum Freq	Percent	Cum Percent
<= 24	504	504	18.287	18.287
25 - 34	656	1159	23.795	42.082
35 - 44	545	1704	19.779	61.861
45 - 54	388	2092	14.068	75.929
55 - 64	343	2435	12.443	88.371
>=65	320	2755	11.629	100.000

First, we found that about 72% of the drivers in the new, more "representative" dataset were aware that there are mandatory sanctions for first-offense DUI in Tennessee (Table 2-3). All of the six age groups except the youngest had about the same level of awareness. By contrast, 68% of the drivers in the unweighted dataset said there were mandatory sanctions.

Table 2-3 - Awareness of Mandatory Sanctions by Age

AGE	Count Row Pct Col Pct	AWARE			Total
		No Response	Yes	No	
<= 24	117	278	108	504	
	23.32	55.22	21.36		
	34.99	14.04	24.72		
25 - 34	34	483	139	656	
	5.10	73.69	21.21		
	9.74	24.38	31.94		
35 - 44	36	419	90	545	
	6.55	76.88	16.57		
	10.36	21.14	20.74		
45 - 54	36	296	55	388	
	9.41	76.47	14.12		
	10.86	14.96	12.57		
55 - 64	51	256	37	343	
	14.75	74.59	10.66		
	15.06	12.90	8.39		
>= 65	64	249	7	320	
	20.00	77.78	2.22		
	19.08	12.58	1.64		
-----					
Total	338	1982	435	2755	
	12.28	71.92	15.80	100.00	

We also found that about 41% of all respondents in the weighted dataset listed jail as a mandatory sanction for first-offense DUI. The same percentage of the non-weighted dataset listed jail. We used the weighted dataset to see if there were any subgroups of drivers with higher or lower awareness of mandatory jail. Subgroups examined were drivers with different drinking and drinking-driving habits, drivers from different locations around the state, and drivers of different sex. None of these subgroups had a level of awareness that differed very much from the 41% value. However, we did find that jail was listed by a very large percentage (about 73%) of drivers who listed any mandatory sanction.

Finally, we used the weighted dataset for calculating the average value of the percentage of convicted drunk drivers believed to actually get a jail penalty. This number increased substantially from that calculated using the raw data, from about 45% to over 57%.

These investigations tended to confirm our preliminary finding that there was a deficiency in both the awareness and the credibility of mandatory jail among the general driving public in Tennessee.

2.2.5 PI&E Campaign. The PI&E campaign was designed and managed by Mid-America's subcontractor, The University of North Carolina Highway Safety Research Center (HSRC). HSRC prepared copy for brochures, print advertisements, placards, etc., as well as sketches (e.g., story boards) and concepts. The Tennessee Department of Safety disseminated the materials.

An effort was made to have a local organization produce a TV spot for the campaign, but this effort was not successful, and project funds had to be used to produce a spot. This was done by using facilities in North Carolina available to HSRC.

The kickoff of the PI&E campaign was held at 1:30 p.m. on August 21, 1986, in Nashville. The press conference was initiated to act as a kickoff for the PI&E segment of the jail sanction project. The conference was jointly sponsored by the Tennessee Department of Safety and the Tennessee Association of Broadcasters, and took place in the Executive Press Room of the Tennessee State Capitol building. Susan Swantek, of Mid-America Research, attended the conference as a representative of this project.

Invited to attend the press conference were representatives of various citizen groups (MADD, RID, SADD), highway safety leaders, private firms involved in alcohol treatment, community health service members, local Chiefs of Police, the Tennessee Sheriffs Association, the Tennessee Restaurant Association, the Tennessee Hotel/Motel Association, the Tennessee Malt Beverage Association, AAA Motor Clubs, the Insurers of Tennessee, the Tennessee Medical Association, the Highway Users Federation and the Tennessee Department of Mental Health and Mental Retardation.

The press conference was well attended, with approximately 50 attendees. These included representatives from the groups listed above, in addition to safety officers from each of the six Tennessee Highway patrol regions, members of the

media, and various legislative and administrative actors who had been active in the passage and enforcement of Tennessee's current DUI law, such as Senator Curtis Purson, Commissioner Long, and Commissioner Dale Kalie.

The press conference was directed by Major Schott of the Tennessee Highway Patrol, who outlined the PI&E campaign, discussed the materials which were made available at the conference, and identified participants in the PI&E effort. Bill L. Jones, the Commissioner of the Department of Safety, gave a brief presentation focusing on the most recent traffic fatalities and DUI arrest figures, and emphasizing the necessity to educate the public about the jail sanction. This was followed by a short address by Tom King, the president of the Tennessee Association of Broadcasters, concerning the necessity for, and the willingness of, the media to participate in the PI&E effort. All three speakers mentioned several times the theme of the PI&E program, "In Tennessee, D.U.I.s Go to Jail - That's The Law".

Thereafter the conference was opened for questions and statements from those in attendance. Reporters had questions regarding traffic fatality figures, enforcement efforts and training in view of police cutbacks, and study results. Other members of the audience raised questions about the possibility of strengthening Tennessee's DUI efforts through the use of an open container law and a per se standard.

The Department of Safety had prepared various materials for distribution. These included:

- Posters;
- Brochures;
- Miniature billboards;
- Envelope stuffers;
- Press releases;
- Live announcer copies;
- Charts and graphs of Tennessee's traffic related statistics 1981--1985;
- Preliminary survey results.

Following the press conference, the PSA was run numerous times, so that everyone attending the press conference could view it. The entire press conference was taped, and was later edited to include the PSA. A 15 minute feed via satellite was made available to all Tennessee television stations for broadcast that evening. Materials were distributed throughout the state.

The campaign continued for the remainder of the study period, i.e., through December, 1986, and an analysis was made of nighttime single-vehicle fatal accidents was made to see if there was any decrease that could be attributed to the PI&E campaign. Kentucky was used as a control state. The analysis was similar to that described in Section 2.1, except that the shock variable had a "1" value over the period of the campaign. No statistically significant change in nighttime single-vehicle fatal accidents was found.

We also replicated the questionnaire survey one year after the first survey to see if there was any change in (1) awareness of mandatory jail and in (2) perception of the percentage of convicted drunk drivers who actually go to jail. Neither measure showed any significant change over the first wave.

### 2.3 Summary and Conclusions

Various single-variable surrogates of alcohol-related accidents in Tennessee, and in two comparison states, Kentucky and Alabama, were examined. No statistically significant reductions in these surrogates were found that could be attributed to mandatory jail, although there was a hint that a small favorable effect might have occurred for a short period after the introduction of mandatory jail. The analyses also suggested that it was possible that nighttime multivehicle fatal accidents, usually a relatively weak surrogate of alcohol-related accidents, were lower after the intervention than would be expected.

A survey of public awareness of mandatory jail indicated a high level of awareness of mandatory jail, but some skepticism that it was actually being imposed on convicted drunk drivers. A public information and education campaign was undertaken with the support of the Tennessee Department of Safety to attempt to correct this deficiency. The campaign was of a level of effort and quality that might reasonably be expected to be undertaken by a state in dealing with such a problem. No significant change in alcohol-related accident surrogates that could be attributed to the campaign was found. This was not unexpected, since there was no significant change in awareness of the mandatory jail law.

### 3.0 RECIDIVISM

The recidivism analysis sought to determine what effect, if any, spending time in jail had on the sanctioned driver's likelihood of committing subsequent DUI offenses and being convicted of DUI again. The recidivism of various subgroups of drivers was also studied to see if such factors as jurisdiction, age, and prior convictions for DUI affected recidivism.

#### 3.1 Approach

State-level tapes containing data on convictions for moving traffic violations (including DUI) were placed in SAS data analysis files on the University of Michigan mainframe computer. Reconviction rates for DUI were then examined. The tapes were made available to the project by the Tennessee Department of Safety.

The main analysis studied nine cohorts of drivers, each cohort consisting of all the drivers convicted of DUI in a given year. The time between the first conviction and the next conviction was then computed for each driver in each cohort. A cumulative distribution,  $P(T)$ , consisting of the fraction of each cohort reconvicted on or before a given time was then constructed.

#### 3.2 Results

3.2.1 Aggregate Results. Figures 3-1 through 3-9 show plots of  $P(T)$  for each cohort. Time is measured in number of 30-day periods after the first conviction, so that each unit of time is equivalent to about one month. All of the curves show a steadily increasing recidivism probability, flattening out as time increases. After one year, roughly 10% of each cohort had been reconvicted for DUI. After two years, about 15 to 20% of the original cohort had been reconvicted.

It is of interest to compare the recidivism curves for 1980 and 1983, 1-1/2 years before and after the new law, respectively. Figure 3-10 is a plot of  $P(T)$  for these two years and shows that the recidivism of the 1983 cohort is consistently lower than the recidivism of the 1980 cohort. This suggests that the tougher sanctions imposed by the law may have had a positive effect in reducing recidivism. However, this difference needs to be considered in the context of the recidivism of the other cohort groups to see if it might merely be due to a trend or some other phenomenon not related at all to mandatory jail.

Figure 3-1: Recidivism for 1977 Cohort, P(T)

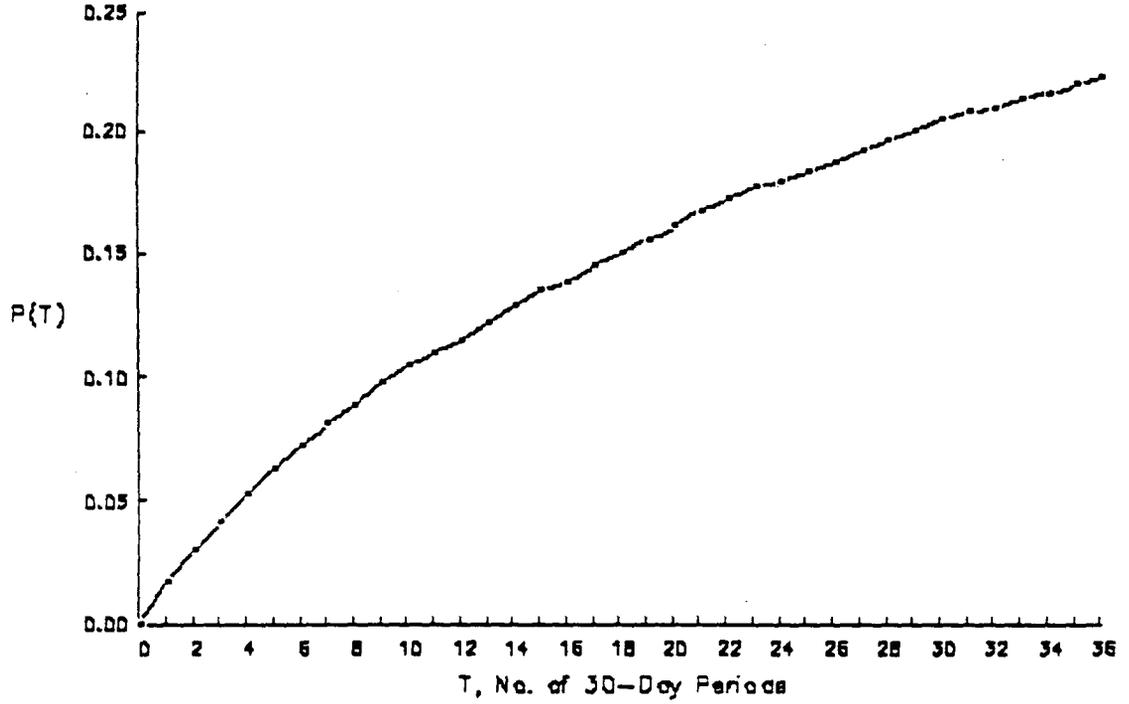


Figure 3-2: Recidivism of 1978 Cohort, P(T)

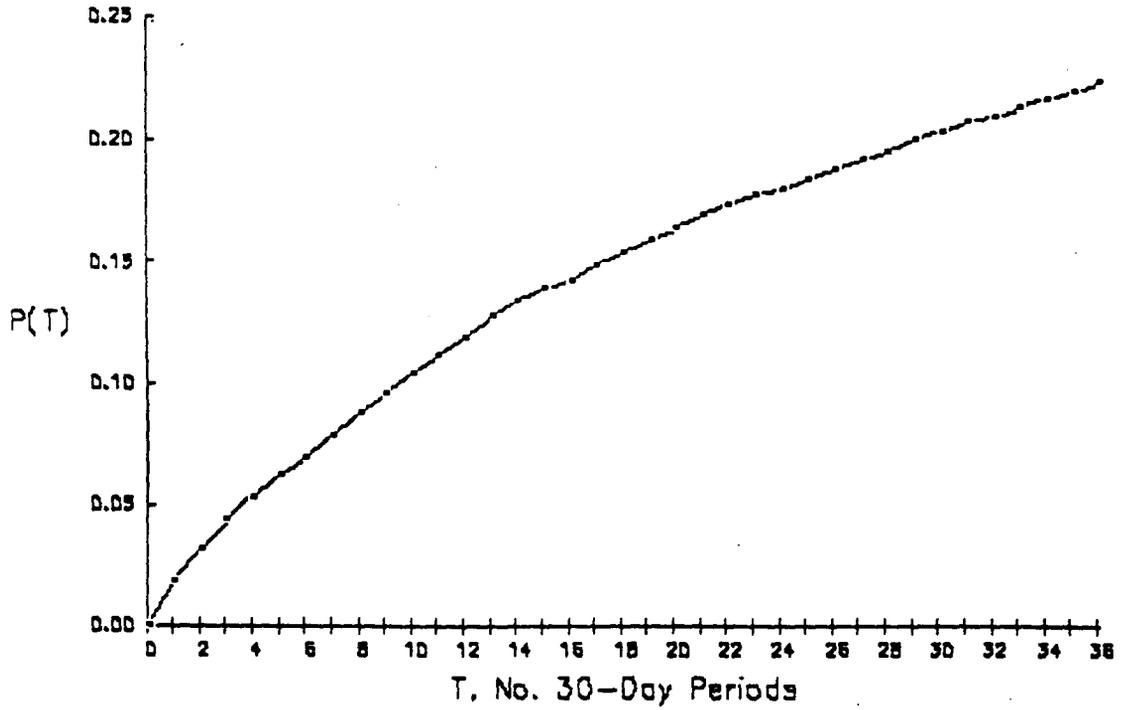


Figure 3-3: Recidivism for 1979 Cohort.  $P(T)$

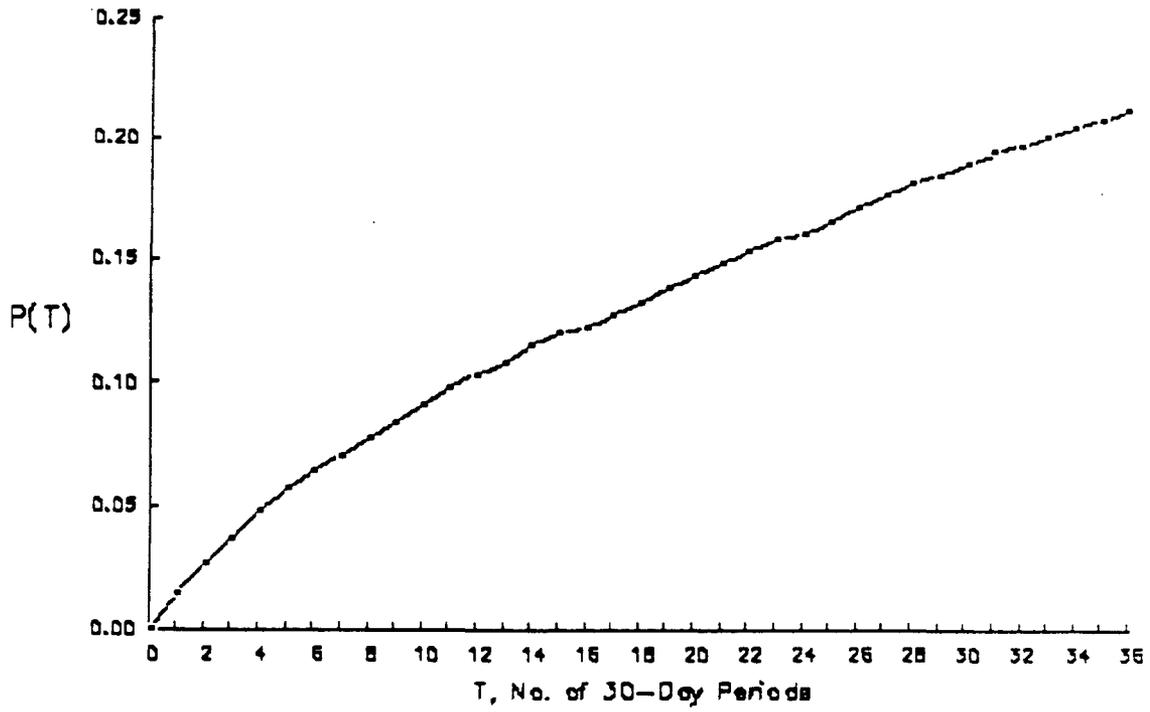


Figure 3-4: Recidivism for 1980 Cohort.  $P(T)$

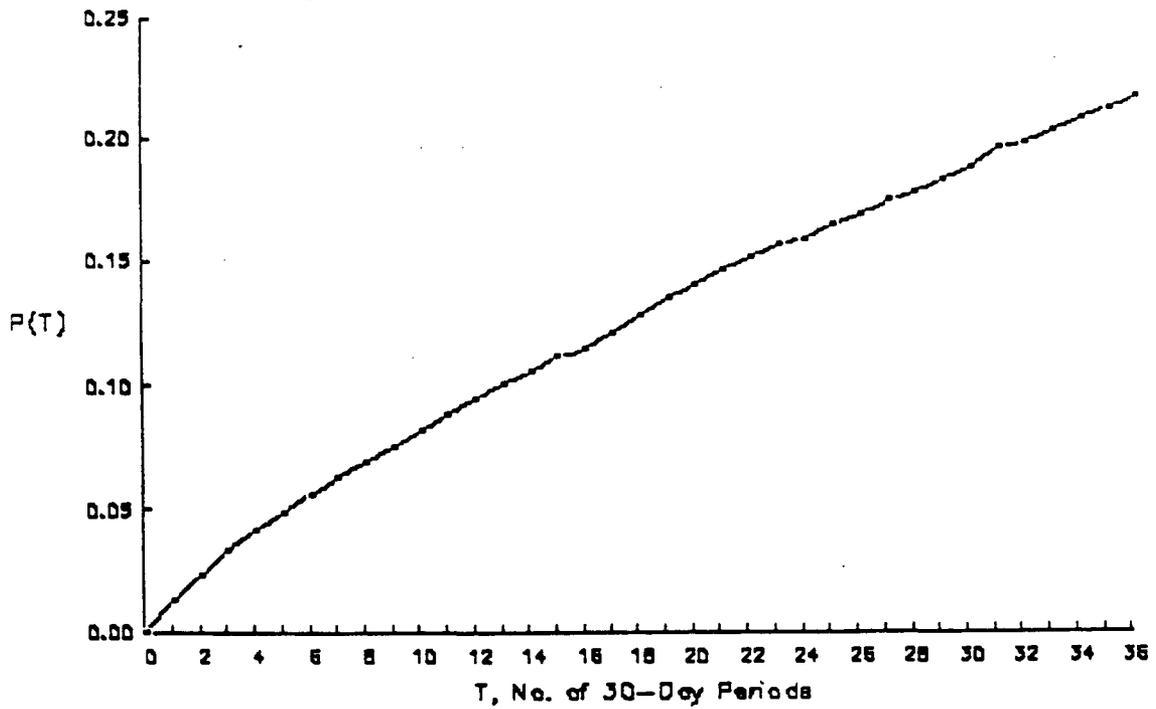


Figure 3-5: Recidivism of 1981 Cohort, P(T)

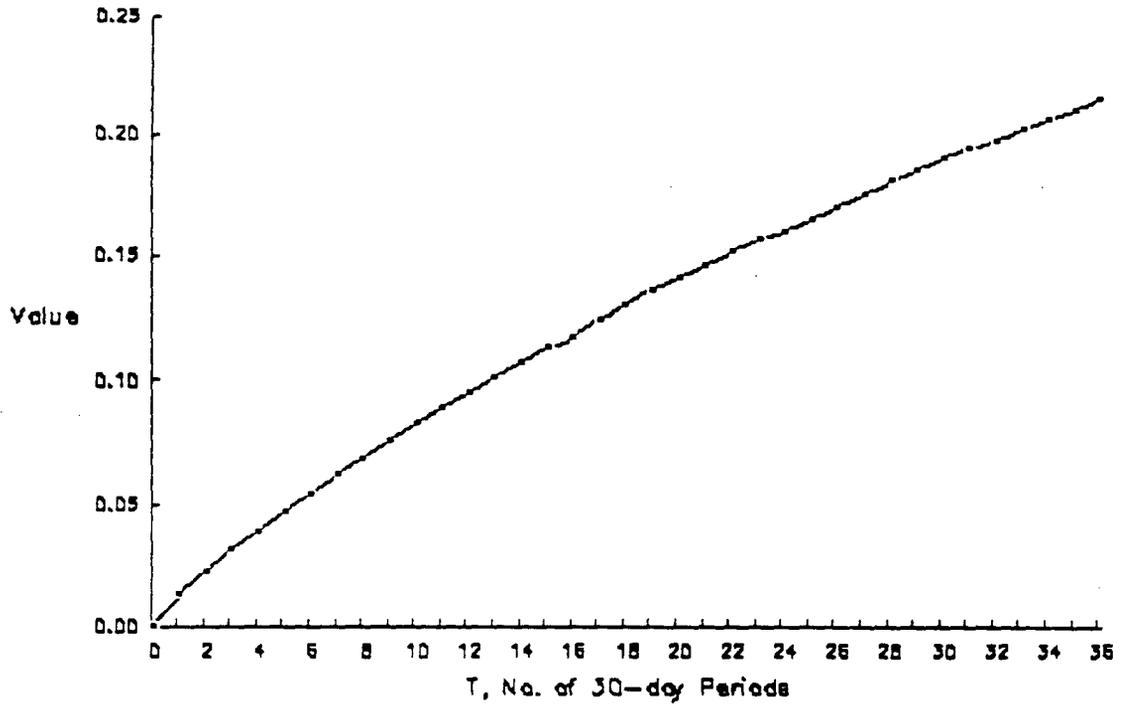


Figure 3-6: Recidivism for 1982 Cohort, P(T)

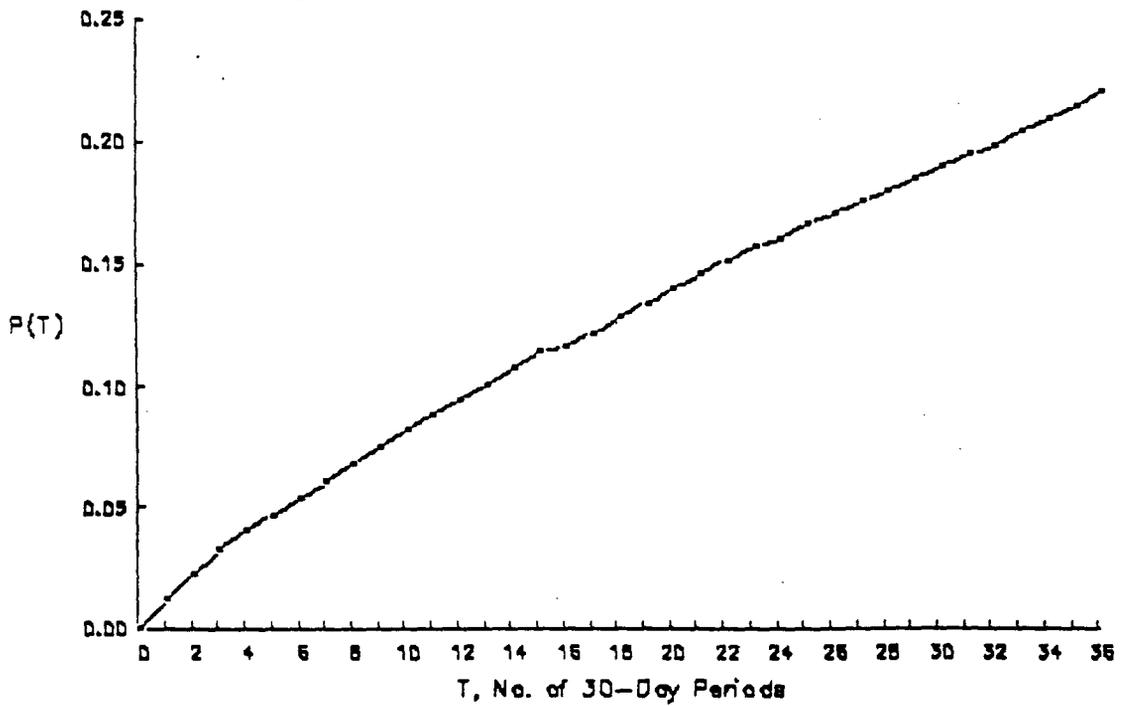


Figure 3-7: Recidivism for 1983 Cohort, P(T)

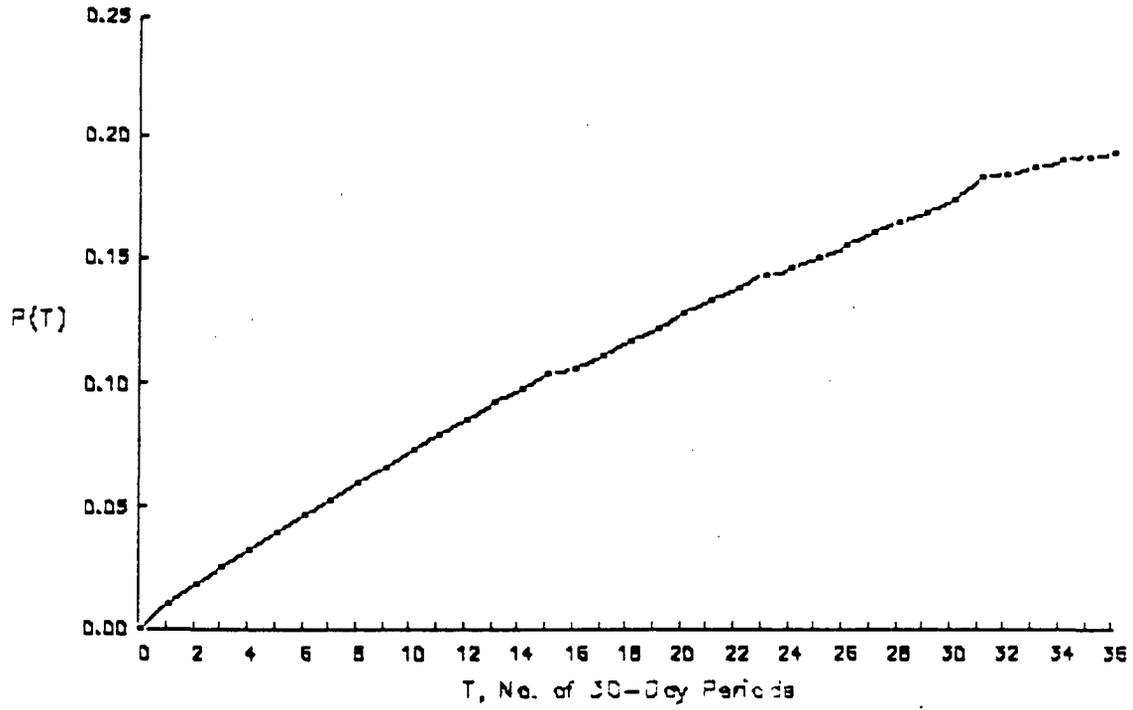


Figure 3-8: Recidivism of 1984 Cohort, P(T)

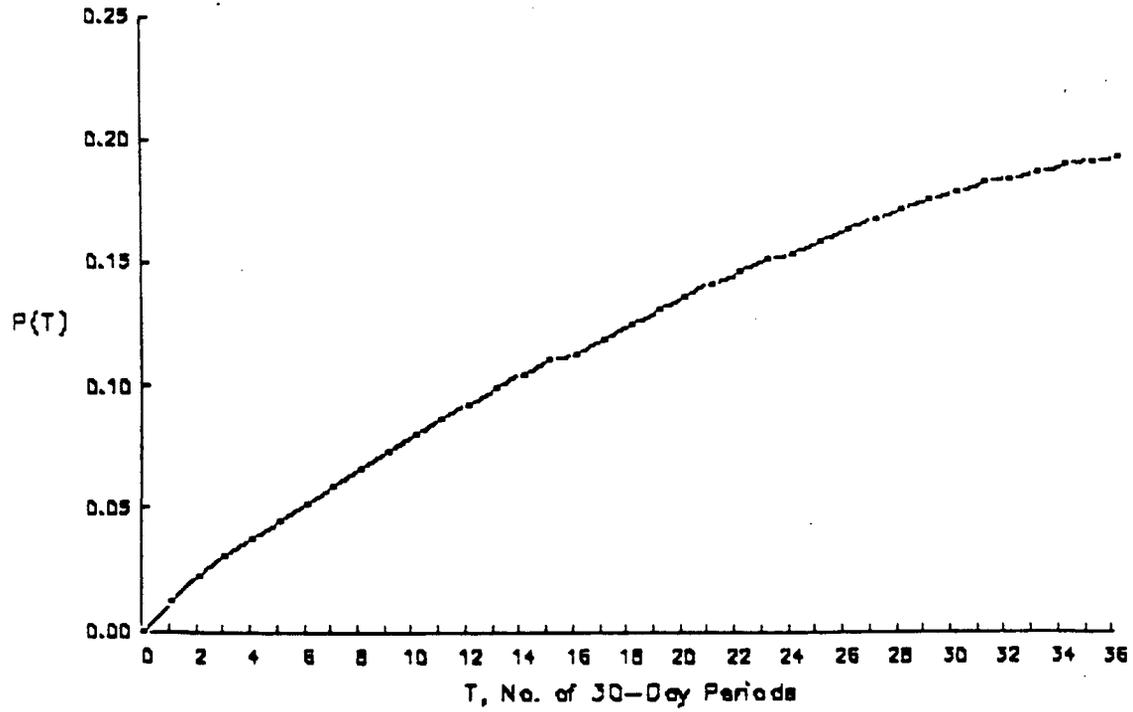


Figure 3-9: Recidivism of 1985 Cohort, P(T)

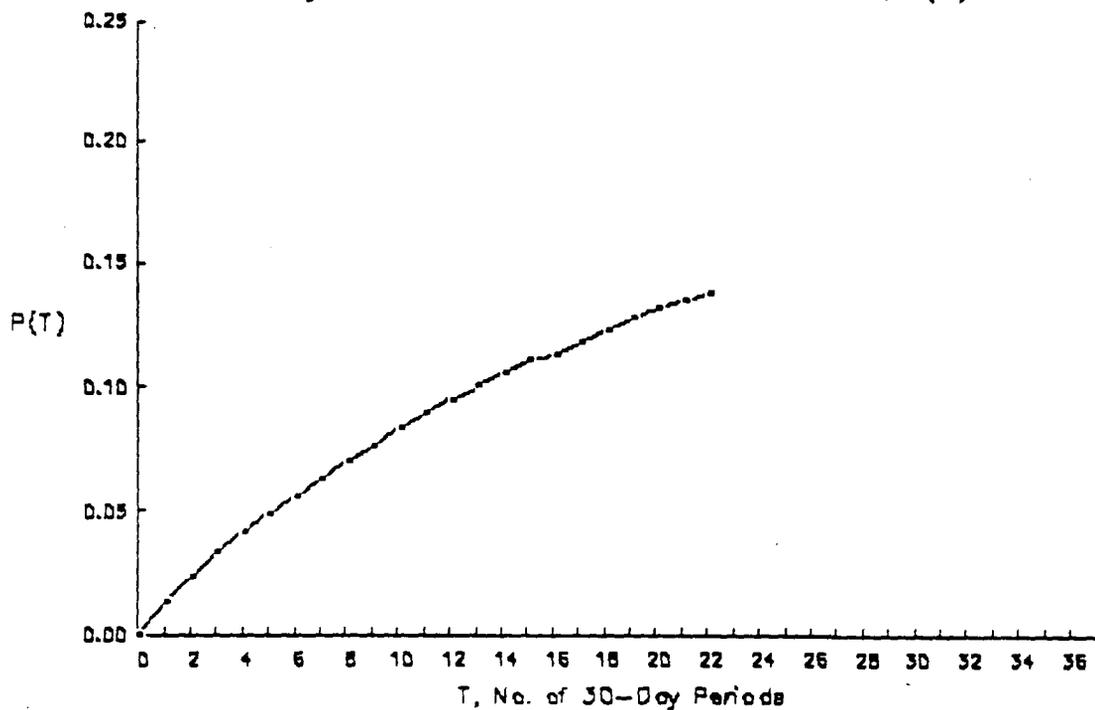


Figure 3-10: Recidivism In 1980 and 1983

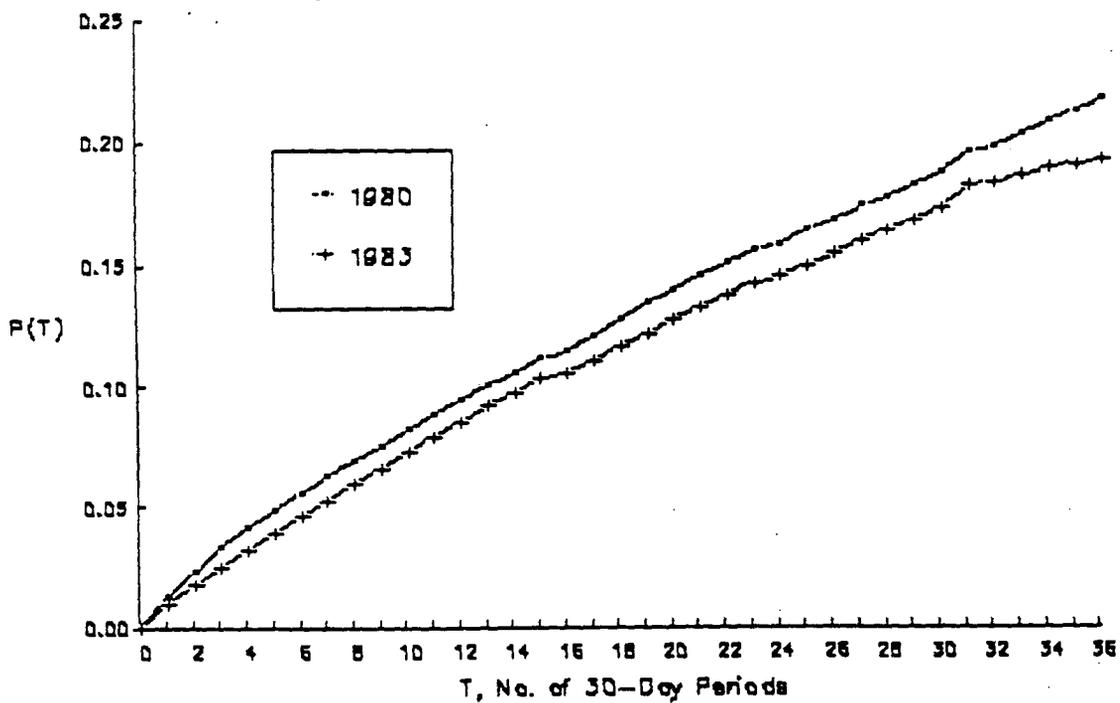
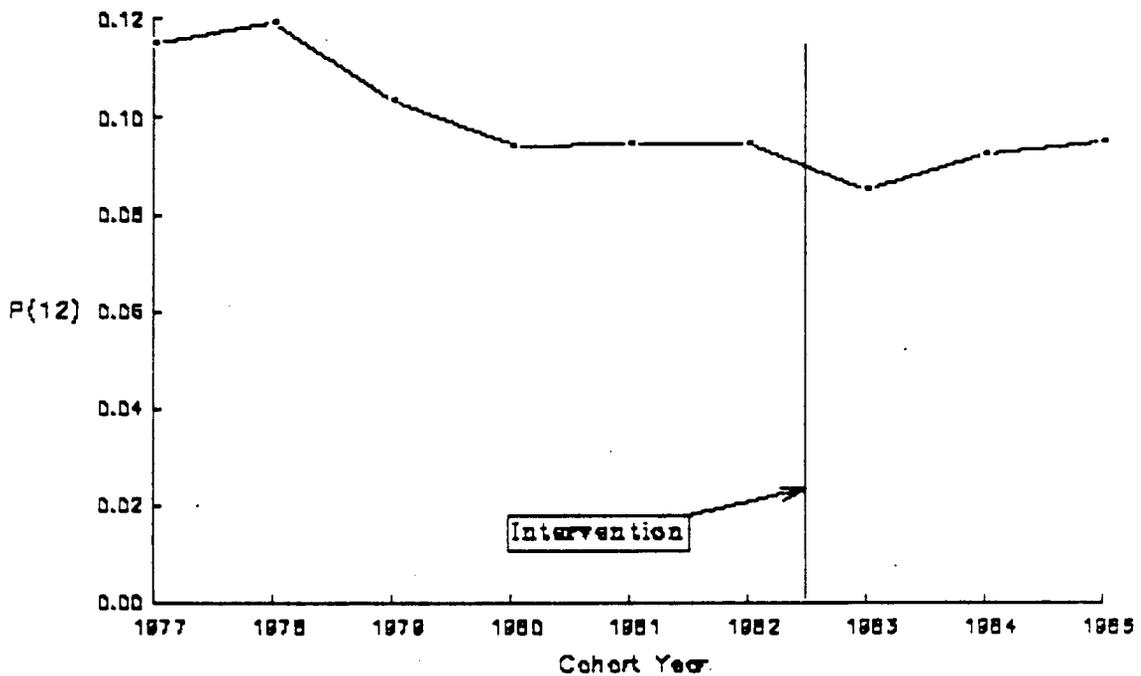


Figure 3-11 shows the fraction of each cohort group that had been reconvicted of DUI after 12 30-day periods, or about one year. The plot indicates that  $P(12)$  drops steadily for three years, levels off through 1982, drops again in 1983, and then rises again in 1984 and 1985. The lowest recidivism occurs for the 1983 cohort, .085, suggesting that jail may have had a small effect in reducing recidivism. The actual dip from the .094 plateau observed in the 1980-1985 period was about 11%.

Figure 3-11: One-Year Recidivism Versus Cohort Year



Some simple models of the recidivism process were developed to help facilitate the analysis. As was shown in the NHTSA-sponsored study of the Traffic Law System (Joscelyn and Jones, 1972), recidivism may be studied as a continuous-time Markov process. If the process had only two states, no-recidivism and recidivism, then  $P(T)$  could be written as  $1 - \exp(-L_R * T)$ , where  $L_R$  is the recidivism rate per time period. However, no constant value of  $L_R$  will fit the data shown in Figures 3-1 through 3-9, so one must assume that the recidivism rate is not constant, that other system states are important, or both.

Further study of the constant-rate hypothesis incorporated a third system state. This state may be thought of as a place where it is *impossible* to either drink, drive, be arrested for DWI, or be convicted for DWI. Lost records (e.g., failure to report a conviction) may also be included. This process may be depicted as follows:

In this formulation,  $L_E$  is the transition rate to the new "out-of-system" state (i.e., state 3).  $P(T)$  is now written as:

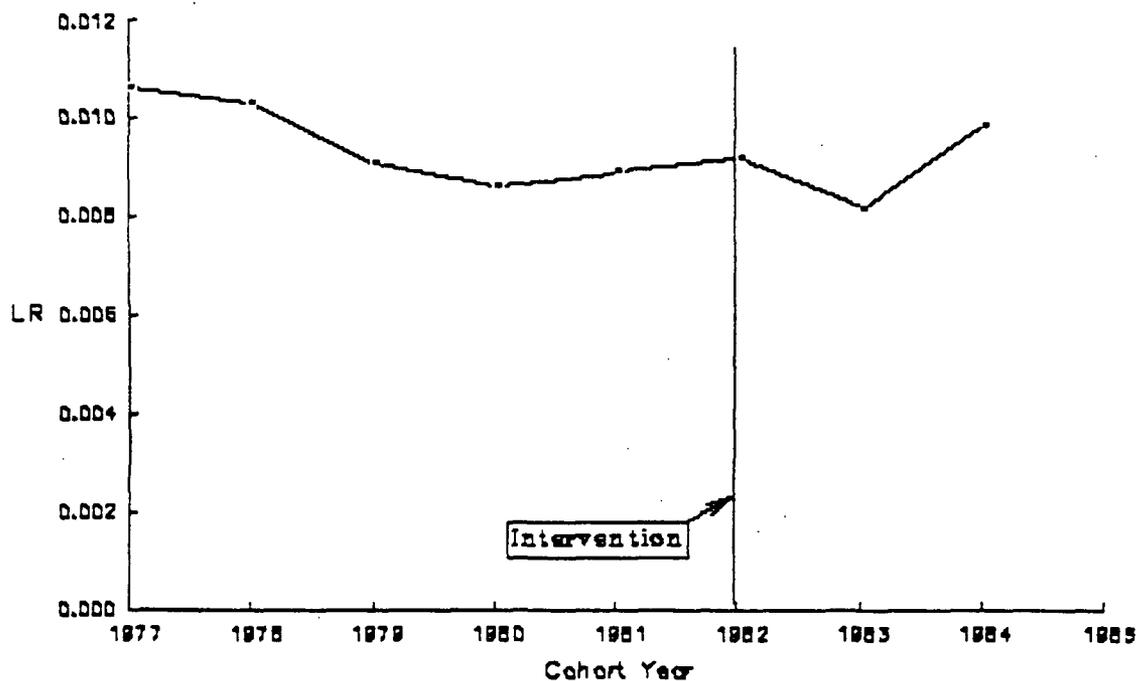
$$P(T) = \frac{L_R}{L_R + L_E} \{1 - \exp[-(L_R + L_E)T]\},$$

and the density function is

$$p(T) = L_R \exp[-(L_R + L_E)T].$$

A non-linear regression analysis was performed using the above expression for the density function as a model. Data for the 1977-1983 cohorts were used with the SAS NLIN program. The 1984 and 1985 cohorts were not used because they had only two to three years worth of valid data due to lags in reporting convictions to the Department of Safety. The best fits occurred when  $L_R$  was approximately .009 to .010 per period (.11 to .12 per year) and  $L_E$  was .012 to .017 per period (.14 to .20 per year).  $L_R$  is plotted versus cohort year Figure 3-12. As expected, the pattern is similar to that of  $P(12)$ .

Figure 3-12: Recidivism Rate Versus Cohort Year



The predicted values of  $P(12)$  are plotted for the 1977-1983 cohorts in Figure 3-13, and compared to the actual values. There is practically no difference between the two curves for the 1980-1983 cohorts, and only a small difference for the 1977-1979 cohorts. Figure 3-14 compares predicted values of  $P(T)$  using the model with actual values of  $P(T)$  for the 1980 cohort. The model approximates the actual curve extremely well throughout all but the first few months of the three-year period modeled.

Figure 3-13: Predicted and Actual Recidivism Versus Cohort Year

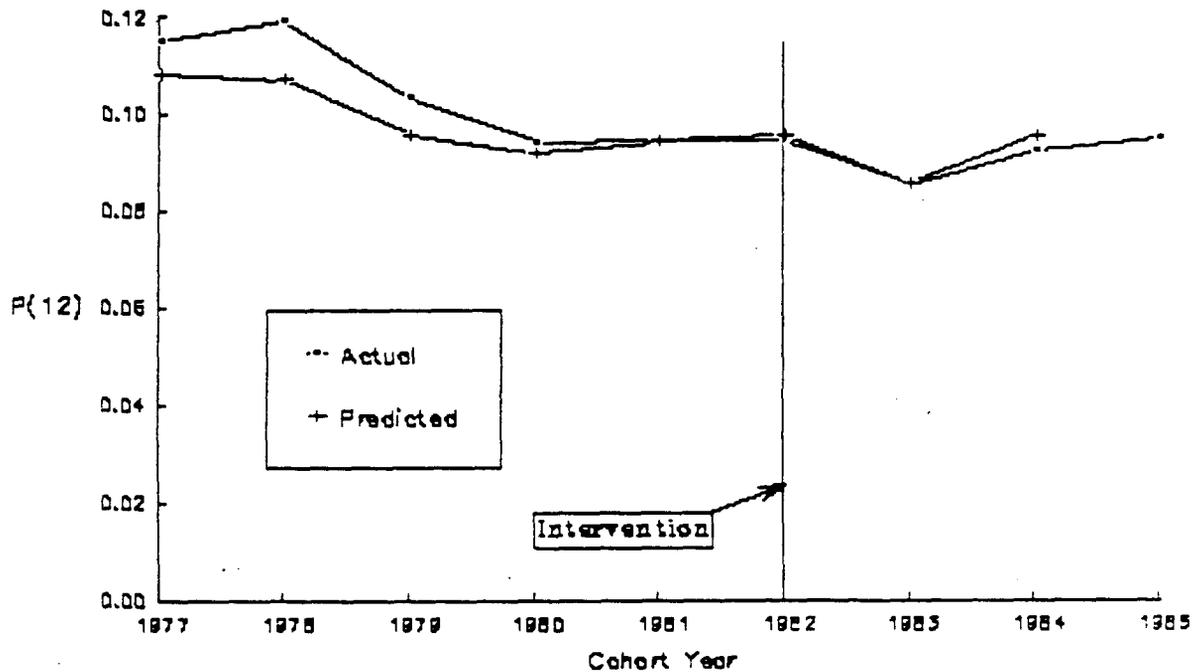
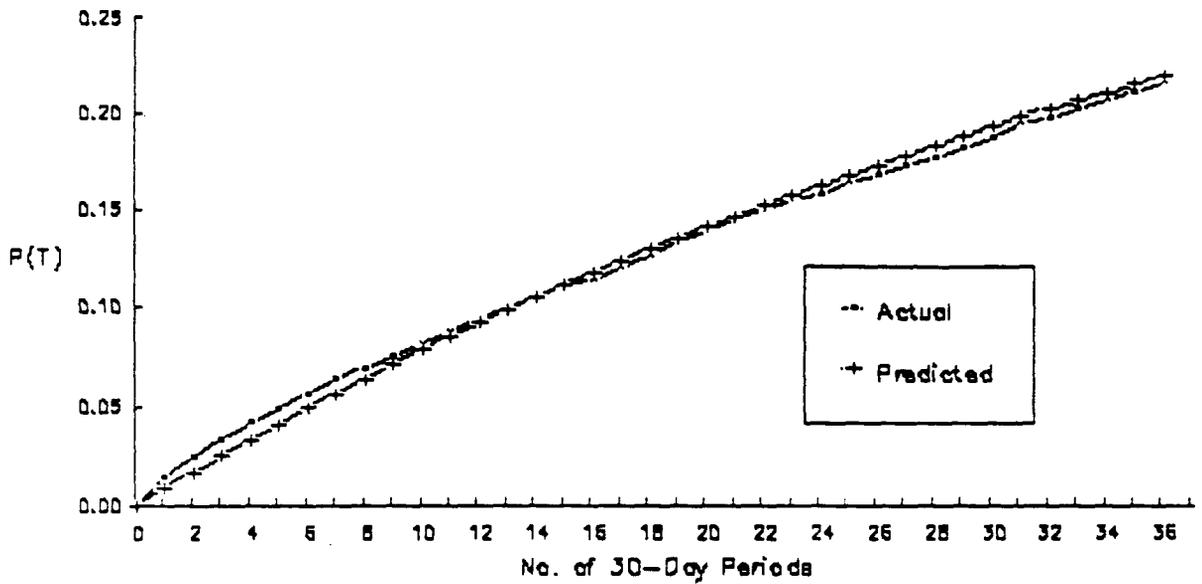
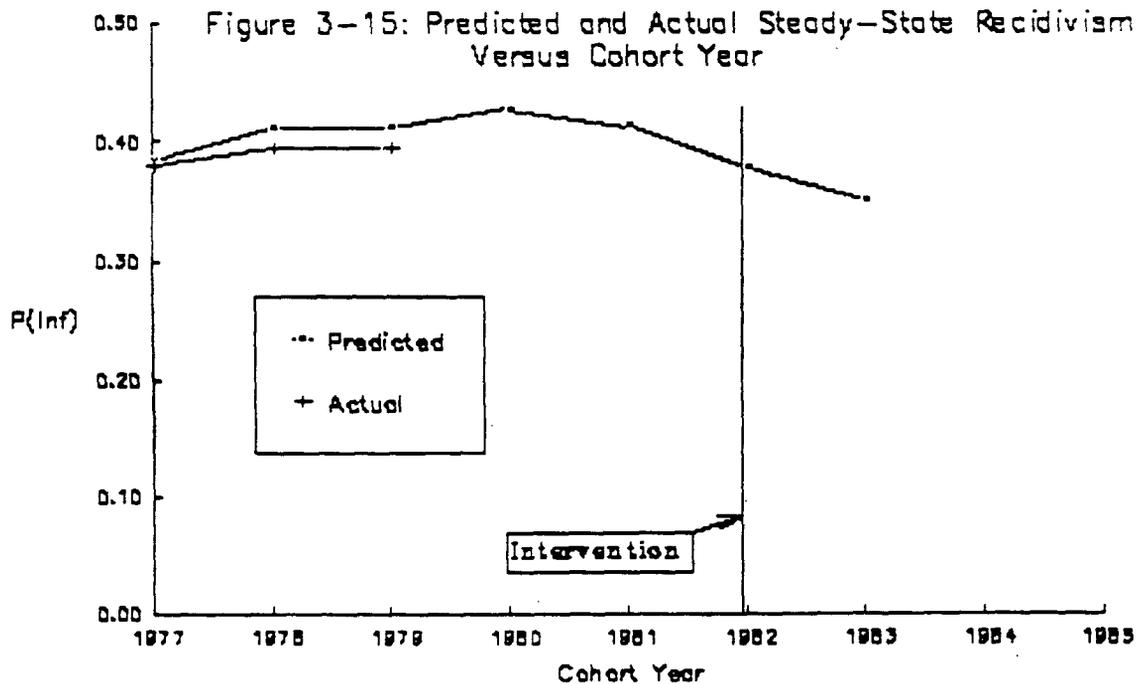


Figure 3-14: Predicted and Actual Redicivism for 1980 Cohort, P(T)



Finally, the steady-state value of  $P(T)$  was computed from the model for each cohort, and is plotted in Figure 3-15. Actual values of  $P(99)$  for 1977, 1978, and 1979 are shown on the plot for comparison. It is seen that  $P(99)$  is slightly less than  $P(\infty)$  for all three cohorts, as would be expected. The figure indicates that approximately 35 - 40% of those convicted of DUI in any given year will eventually be convicted again for DUI.



A series of more detailed analyses followed. Data tapes provided by the Tennessee Department of Safety (DOS) again were used in the analyses. The results of these analyses are summarized below.

3.2.2 Recidivism in the Case-Study Jurisdictions. Several new data files were prepared for use in the recidivism analysis. One file contained recidivism data for drivers whose first arrest was in one of the two case-study jurisdictions, i.e., Hamilton County or Davidson County. Table 3-1 shows the one-year recidivism of each of three years of cohorts from Hamilton County, Davidson County, and the state as a whole. There was no large difference in recidivism among the three jurisdictions for any of the three years examined, and the pattern among the three cohort years was similar.

Tables 3-2 and 3-3 show the average age of various cohort groups and of recidivists, respectively. Again, there are no large differences among the three jurisdictions; the average age is about 33-35, both for the cohort groups and for the recidivists.

These results provided support for our research design which used a case-study approach to estimate the effects of the new law on the drinking-driver control system in the case-study jurisdictions, and also to get some idea of system effects statewide. The fact that two important attributes of system activity, recidivism and average age of drunk drivers, are essentially the same in the two case-study jurisdictions and statewide, lends credence to extrapolation of some case-study findings to the state as a whole.

**TABLE 3-1: RECIDIVISM IN THE CASE STUDY JURISDICTIONS AFTER TWELVE 30-DAY PERIODS**

YEAR OF 1ST CONVICTION	GROUP	P(12)
1977	HAMILTON	.111
1977	DAVIDSON	.115
1977	STATEWIDE	.115
1979	HAMILTON	.095
1979	DAVIDSON	.122
1979	STATEWIDE	.103
1983	HAMILTON	.090
1983	DAVIDSON	.080
1983	STATEWIDE	.085

TABLE 3-2: AVERAGE AGE OF DRIVERS AT FIRST CONVICTION

YEAR OF 1ST CONVICTION	GROUP	AVERAGE AGE
1977	HAMILTON	34.7
1977	DAVIDSON	34.1
1977	STATEWIDE	33.4
1979	HAMILTON	33.4
1979	DAVIDSON	34.8
1979	STATEWIDE	33.8
1983	HAMILTON	34.9
1983	DAVIDSON	34.3
1983	STATEWIDE	34.1

TABLE 3-3: AVERAGE AGE OF RECIDIVISTS

YEAR OF 1ST CONVICTION	GROUP	AVERAGE AGE
1977	HAMILTON	35.6
1977	DAVIDSON	34.0
1977	STATEWIDE	33.1
1979	HAMILTON	32.7
1979	DAVIDSON	35.1
1979	STATEWIDE	33.3
1983	HAMILTON	35.6
1983	DAVIDSON	33.6
1983	STATEWIDE	33.7

3.2.3 Effect of Prior Convictions. This analysis examined the recidivism of two cohorts of drivers convicted of DUI in each of two years, 1979 and 1983. The first cohort had no prior convictions for DUI and the second cohort had one or more prior convictions. The determination of the existence of a prior was made by having the computer check the state DUI conviction file back to its beginning (approximately 1974) for each driver in the 1979 and 1983 cohorts.

Table 3-4 shows the probability of reconviction of these cohorts after 12 30-day periods. The no-prior group had a much greater reduction in recidivism than did the group with priors. Also, the group with priors had a much higher recidivism rate in each year than did the group without priors -- about 64% higher in 1979 and 77% higher in 1983.

Table 3-4

Group	Year		% Reduction, 1979-1983
	1979	1983	
No Priors	.091	.073	19.8
Priors	.149	.129	13.4
All	.103	.085	17.5

Table 3-5 shows the Ns of the original cohorts in 1979 and 1983. Both the prior group and the no-prior group increased at about the same rate over the 1979-1983, approximately 77%. Further, the percentage of drivers with priors was a constant 20.5% in both 1979 and 1983. This indicates a rather surprising stability in the composition of the total cohorts with respect to prior DUI offenses.

Table 3-5

Group	Year		% Increase, 1979-1983
	1979	1983	
No Priors	11621	20644	77.8
Priors	3002	5324	77.3
Total	14623	25967	77.6

These findings tend to support the hypothesis that the reduction in recidivism in 1983 was not due simply to a disproportionate increase in convictions of persons with no priors. First, both the prior group and the no-prior group have nearly identical reductions in recidivism. Second, the prior group and the no-prior group appear in the same proportions in both years.

**3.2.4 Effect of Driver Age.** We also examined the recidivism of persons in three different age groups in 1979 and 1983. The probability of reconviction after 12 30-day periods for each age group is shown in Table 3-7. The percent reduction in recidivism probability from 1979-1983 for these age groups is also shown. The various age groups differ with respect to recidivism in both of the two years, and also with respect to reduction in recidivism from 1979 to 1983. The smallest reduction occurs for the lowest age group, and the largest reduction is for the mid-range age group.

Table 3-7  
 Recidivism Probability After 12 30-Day Periods  
 For Drivers in Different Age Groups

Age Group	Year		% Reduction, 1979-1983
	1979	1983	
<= 24	.087	.085	2.3
25 - 54	.138	.087	37.0
>= 55	.100	.074	26.0
All	.103	.085	17.5

Table 3-8 shows the Ns of the cohorts in the different age groups in the two years. Both the oldest and the middle groups increased slightly as a percentage of the total cohort in the 1979-1983 period. By contrast, the oldest group was a smaller percentage of the total cohort in 1979 than it was in 1983. If the recidivism probability of each age group remained the same in 1983 as it was in 1979, but the percentage of those convicted in each age group changed as indicated by the data, then the recidivism probability of the total cohort in 1983 would be almost exactly the same as it was in 1979, i.e., 0.103. Thus, this analysis indicates that none of the actual decrease in overall recidivism probability from 1979 to 1983 can be attributed to a change in the age distribution of convicted drunk drivers.

Table 3-8

Age Group	Year			
	1979		1983	
	N	%	N	%
<= 24	3915	26.7	7170	27.6
25 - 55	9505	65.0	17145	66.0
>= 55	1203	8.3	1652	6.4
All	14623	100.0	25967	100.0

**3.2.5 Other Effects.** More work needs to be done to examine the fine structure of the recidivism process. For example, we compared recidivism after one year, i.e., P(12), to the number of various kinds of fatal accidents in Tennessee to see what kinds of patterns might emerge. We found that P(12) varies in time very similarly to the total annual number of nighttime multivehicle fatal accidents, but not to the number of nighttime single-vehicle fatal accidents. After accounting for a downward trend, there is also some similarity between P(12) and the multivehicle fatal accident rate per registered driver.

This suggests that there is a calendar-year specific effect on recidivism, and that this effect should be controlled for before comparing reconviction rates over time. The simplest way to do this is to use a model of the form:

$$r(i,j-i) = a(j-i)*b(j) ,$$

where  $r$  is the re-conviction rate of drivers first convicted in year  $i$ , in the year  $j$ . The term  $a(j-i)$  is a "normal" re-conviction rate which includes effects of aging and attrition, and  $b(j)$  is the specific calendar year effect. Estimating  $a(j-i)$  from this relationship is difficult, but for a four-year period it appears reasonable to assume the following approximation:

$$a(j-i) = a_0 - a_1*(j-i).$$

Then,

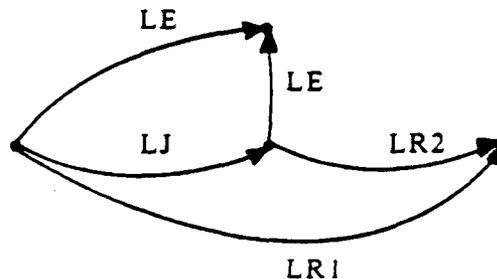
$$r(i,j-i) = (a_0 - a_1*(j-i))*b(j).$$

The form of the model can be changed without changing the fit of the model, viz.:

$$r(i,j-i) = (1-w*(j-i))*b(j).$$

To apply this model, both  $w$  and  $b(j)$  must be estimated from the recidivism data. Time did not permit us to use this model to examine any possible calendar-year specific effects, but it appears to be a logical next step in the recidivism analysis.

Other models should be developed that account explicitly for more system states. For example, some individuals did not receive a jail sentence, and others were sentenced to jail, but did not go to jail immediately after conviction because of overcrowded jails or other reasons. Thus, the data aggregates two reconviction transition rates, LR1 and LR2, that actually should be disaggregated. The rate LR1 represents the reconviction rate for individuals who did not go to jail, and LR2 represents the reconviction rate for individuals who did go to jail. We are very much interested in both of these rates, since their ratio is a measure of the effectiveness of jail. An additional rate, LJ, the rate of entering jail for those who go to jail, is also of interest. A simple four-state model incorporating these three rates could easily be developed from the following flow graph:



### 3.3 Summary and Conclusions

DUI conviction data in Tennessee were examined for a series of cohorts spanning a time period of nine years. The DUI recidivism rate after one year for the cohort that was convicted in 1983 (six to eighteen months after the intervention) was about 11% lower than it was for the cohorts that were convicted in each of the three prior years. However, the recidivism rate of the 1984 cohort rose again to near the level experienced before the intervention, and the rate for the 1985 cohort rose a small additional amount. Thus, any decrease in recidivism realized for the 1983 cohort had been wiped out after two more years.

Our analyses suggest that the 11% decrease in 1983 was not due to disproportionate changes in the distribution of driver age or prior convictions for DUI. However, it is possible that a calendar-year specific effect of unknown origin, or even some other factor, may have influenced this decrease. At any rate, the lower rate has not been maintained. Further study is needed to determine the reasons for this.

It is significant that a much larger decrease in recidivism was noted among offenders without prior convictions for DUI. A possible reason for this is that drivers with prior convictions are more likely to be alcohol abusers and thus to be less able to control their post-jail drinking-driving behavior.

## 4.0 OPERATIONAL EFFECTS

The objective of this substudy was to describe the effect of the mandatory-jail law on the drinking-driver control system, i.e., the loose-knit network of governmental agencies that deal with the alcohol-crash problem. These agencies include enforcement, adjudicative, and sanctioning agencies from all three branches of state and local government, as well as those agencies that administer education and treatment programs for drinking-driving problems.

### 4.1 Approach

A case-study methodology was used, the case study sites being Chattanooga and Nashville. Certain state-level information was also collected and analyzed. The case studies involved a systems analysis of the enforcement, adjudication, and sanctioning functions of the drinking-driver control system in Chattanooga and Nashville. Data for the systems analysis was obtained through a series of semi-structured discussions with officials of relevant agencies and the compilation and analysis of records and figures from those same agencies.

The study used both qualitative and quantitative methods, the former for preparing narrative system descriptions of pertinent processes in the two case-study jurisdictions, and the latter for examining case processing performance at the two sites.

Note that the descriptions are based almost entirely upon the opinions of the system actors we interviewed and not upon direct observations made by the project team. Further, the material describes conditions as they existed at the time the interviews were conducted. By the time this report is published, conditions may have changed.

### 4.2 Results

4.2.1 Qualitative Analyses. The narrative descriptions of the drinking-driving control system are provided in this section. The descriptions first set forth the Tennessee state drunk-driving law, which was significantly amended in 1982, and discuss related legal developments since that time. Possible future alterations in the law are also discussed. This is followed by a description of the Chattanooga and Nashville drinking-driver control systems. These descriptions examine the criminal justice system in each of the jurisdictions, focusing on the operation of the enforcement, adjudication and sanctioning functions as they relate to drunk driving cases. Finally, conclusions about effects of the mandatory jail are presented.

#### **Law Generation**

Prior to 1982, Tennessee's drunk-driving laws were similar to those in many states. The sanctions imposed included: minimal fines (\$10 for a first offense DUI, \$25 for a second offense, and \$50 for a third or subsequent offense); non-mandatory minimal jail sentences for first offenders (48 hours), second

offenders (five days), and third or subsequent (60 days) offenders, which was commonly replaced by community service; no minimum prohibition on driving for first or second offenses as both were eligible for restricted licenses. There was also no restriction on the use of pretrial diversion and plea bargaining, although as a matter of policy in the State District Attorney General's Office, DUI plea bargaining is said to have been rare.

The Tennessee legislature rewrote the state's drunk-driving laws in 1982. Those changes, contained in 1982 Tenn. Laws, Chapter 891 (Tenn. Code Ann. sec. 55-10-101 et seq. (Supp. 1984)), took effect July 1, 1982, and greatly increased the penalties imposed for a DUI conviction. Prosecution of drunk driving in Tennessee is now done only under the state DUI law. All DUI convictions carry a mandatory jail sanction. The current sanctions imposed by Tennessee law are as follows:

1st offense -- 48 hours to 11 months 29 days jail time  
\$250 to \$1000 fine  
1 year suspended license with a restricted license possible  
if no casualties are involved

2nd offense -- 45 days to 11 months 29 days jail time  
\$500 to \$2500 fine  
2 years suspended license, no restricted license available

3rd and subsequent offenses --  
120 days to 11 months 29 days  
\$1000 to \$5000 fine  
3 to 10 years suspended license, no restricted license  
available

The law states that all convicted DUIs remain on probation for the time difference between the actual jail time served and the maximum sentence possible. A condition of that probation is that the convicted drunk driver attend DUI school, and upon conviction of a second or subsequent offense, participate in a program of rehabilitation at an alcohol treatment center. Additionally, a convicted DUI must pay restitution to any victim suffering physical or personal loss, if he/she is financially capable of doing so.

If a defendant's blood alcohol concentration is .10% or greater, the law creates a presumption that he or she was under the influence of alcohol and that his or her ability to drive was impaired. If a defendant's BAC level is .05% or less, no presumption is created.

The 1982 amendments also limited the use of plea bargaining and pretrial diversion programs. However, the effect of this change on the system does not appear to have been great, since it had been the general policy of the State District Attorney's Office not to plea bargain DUI charges.

There have been attempts to modify the DUI penalties, especially the mandatory jail sentence. In one session of the legislature there was an unsuccessful move to allow community service to be substituted for the jail sentence. There another movement in the legislature to amend that part of the DUI law which mandates a 48-hour jail sentence for first offense drunk driving.

These efforts stem from what might be termed a state prison crisis. The Tennessee state prison system has been under court supervision for some time due to overcrowding and other conditions in the prisons. As a result some prisoners in state prisons have been transferred to county jails. This has increased the strain on the county jails which were already facing a large influx of drunk driving prisoners. A special session of the legislature was convened in order to deal with the worsening situation. However, to date law the anti-jail forces have been unsuccessful in the legislature, and the mandatory jail sanction still remains in place.

Most attempts to modify mandatory sentencing, at least for first offenders, center upon the substitution of community work, specifically litter pick-up. Organized groups, such as RID and MADD, have been active in the past in opposing such a modification, particularly since only Chattanooga reportedly has a program set up which would allow convicted drunk drivers to work on litter pick-up crews. However, two local RID members and several criminal justice personnel in Chattanooga believe that if the modification clearly stated that the alternative sentencing was limited to physical work, such as litter pick-up, such a change might well be successful.

The legal age for the purchase and consumption of alcohol was raised from 19 to 21, on a phased-in or "grandfather" basis, effective October 1, 1984. Other recent changes regarding drinking laws include a ban by the Tennessee Alcoholic Beverage Commission on "Happy Hour" promotions after 9:00 p.m. and "two for one" drink specials at any time. Additionally, even though Tennessee has no dram-shop statute, we have been informed that there has been an increased number of civil suits against servers, demanding large amounts of damages.

Note that according to an opinion issued by the Tennessee Office of the Attorney General (No. 84-135), charges of driving while intoxicated and of reckless driving constitute separate offenses, and reckless is not a lesser included offense of driving while under the influence of an intoxicant.

### **Chattanooga**

Background. Chattanooga, Tennessee, the state's third largest city (1984 metropolitan statistical area population 422,500), is located in the mountainous, southeastern part of Tennessee, immediately north of the Georgia border. The city is served by three major interstate highways--I-75, a north-south highway linking the Great Lakes states with Florida; I-24, an east-west highway linking Chattanooga and Nashville; and I-59, a north--south highway linking Chattanooga and Birmingham, Alabama--and, as a result, a large volume of traffic travels through the city.

Chattanooga is one of the nation's oldest manufacturing cities, with more than 26% of its employment in that sector. However, there is no single dominating industry. Chattanooga is generally viewed as a conservative city, with what some actors in the justice system refer to as a strong "Bible Belt" orientation. Chattanooga is the home of the University of Tennessee at Chattanooga. The Chattanooga area was also a major Civil War battle site and is the home of such tourist attractions as Rock City and Ruby Falls.

Chattanooga is served by two daily papers: the Chattanooga Times in the morning and the Chattanooga News-Free Press in the afternoon. The city also has eight television stations (including one local independent station) and 23 radio stations.

Although Chattanooga borders Georgia, there is said to be little "border crossing" because of different age restrictions (Georgia is raising its legal age from 19 to 21 in two steps, to be fully effective in September 1986); however, it has been reported that residents of some Georgia towns travel to Chattanooga because of that city's more active night life.

Chattanooga is a site of NHTSA's Target of Opportunity program. Funding under that program, supplemented by a grant from the Governor's Highway Safety Program, supports a DUI Task Force, a special prosecutor for drunk driving cases, and a community-wide traffic safety assessment. As part of that assessment, the Hamilton County Board of Commissioners formed a council of elected officials, the Advisory Council on Traffic Safety (ACTS), to coordinate traffic safety activities.

Enforcement. In Chattanooga the Chattanooga Police Department or the Hamilton County Sheriff's Department make about 90% of the DUI arrests. Arrests are also made by the Tennessee Highway Patrol, which states that it makes 20% of the DUI arrests statewide. Chattanooga has a DUI Task Force, which was established in 1984, as a part of a comprehensive, community based drunk-driving program. The Task Force consists of seven law enforcement officers--five from the Chattanooga Police Department and two from the Hamilton County Sheriff's Department--whose duties include only drunk driving enforcement. Each DUI Task Force officer has a white "DUI car" which is readily distinguishable from other police vehicles. DUI Task Force officers use these vehicles to drive through the parking lots of bars and restaurants throughout the city, a tactic which they believe to be successful in discouraging drunk driving.

The Task Force has also been involved in staging juvenile liquor-buys as part of a crackdown on the sale of alcohol to minors by convenience stores. Both the Sheriff's Department and the Chattanooga Police Department also make use of selective enforcement, targeting areas and days for drunk driving enforcement. Although the use of roadblocks has been considered, a political decision was made to delay any such program out of concern that roadblocks might have a negative effect on public support for stricter enforcement of drunk driving laws. The DUI Task Force has emphasized tactics that generate publicity, in an effort to increase general deterrence.

Three of the DUI Task Force's officers also act as instructors to the rest of the police force in the area of drunk driving enforcement. Both city police officers and sheriff's deputies are trained in the use of NHTSA's visual cues to spot a drunk driver; in using techniques such as gaze nystagmus and other on-site testing; and in accurately completing prearrest reports. A greater degree of observation for visual signs of impaired driving and increased attention to drivers' physical signs of intoxication on the part of police officers may be responsible for a decline in the average BAC of a drunk driving arrestee to about .15%. The Chattanooga Police Department once videotaped a suspect's performance of physical sobriety tests. Although videotaping was believed to be an effective evidentiary tool, the department abandoned it when DUI Task Force logistics forced it to use single-officer patrol vehicles.

Arrests in Chattanooga have increased slightly from 1983 to 1984, from 1700 to 1900, although the number of arrests began to fall in 1985. A statistical analysis performed by the Chattanooga DUI Task Force also indicated that there has been a decrease in the number of traffic fatalities, a decrease in the average blood alcohol concentration level of those arrested for drunk driving (it is now approaching .15%), and a decrease of 20 to 30% in the number of alcohol-related accidents.

In Chattanooga a typical drunk-driving arrest begins with a stop for a moving violation or, especially after midnight, a stop on suspicion of drunk driving. If the officer suspects that the driver is intoxicated, he or she asks the suspect to get out of the car, and then carries on a conversation with the driver. In addition to asking the driver to leave the car, the officer also asks the suspect to produce his or her driver's license, and observes the driver's manner of speaking, posture and appearance. If the suspect appears to be impaired, the officer will then administer a series of field sobriety exercises, consisting of a gaze nystagmus observation and various divided-attention tasks.

The officer's observation of the suspect during this process is instrumental in establishing at trial that the officer in fact had probable cause to arrest the suspect for drunk driving. If the officer believes that the driver's BAC would be less than .10%, he or she will usually transport the driver home. However, if the driver's performance of physical tests indicates that he or she would "fail" a chemical test, then the officer will place the suspect under arrest, search the vehicle for weapons, and handcuff him or her. At the same time, the officer will decide how to dispose of the suspect's car, i.e., whether to allow it to remain where the stop occurred until the suspect or a friend of the suspect can collect it, or whether to have it towed.

If the officer decides to make an arrest, he or she then begins writing up an arrest report, which consists of the basic arrest form plus an alcohol influence report, and an affidavit complaint which contains the basic facts of the arrest and the date on which the officer wishes the case to be heard. The officer also explains the implied consent laws to the suspect and reads the Miranda warnings. The suspect is then transported to the jail, unless the officer decides that a blood alcohol test is required, in which case the suspect is taken to Erlanger Medical Center (a hospital).

At the jail (usually the Chattanooga city jail, depending upon where the arrest was made) the suspect is placed into the holding section. The officer gives the arrest report to the jail personnel and hand carries the affidavit complaint to the court clerk; jail personnel then book the suspect. The breath test is administered after booking by either a member of the DUI Task Force or by one of the jail personnel; the test device is the Intoximeter 3000(R). If the suspect refuses to take the test, the test administrator fills out a form for that purpose. If the suspect refuses the test the testing officer seizes the suspect's driver's license and issues the driver a 30-day temporary license. Refusal carries a six-month license suspension, at the end of which the driver must appear at a Department of Safety hearing to have his or her license restored.

It is police policy to require a drunk driving defendant to spend at least six hours in jail to "sober up". A defendant who cannot post bail must spend the night in jail and make an initial court appearance the next morning, unless the suspect is arrested on a Saturday night, in which case the initial appearance takes place on the following Monday morning. If the defendant is still unable to post bail (usually \$500, 10% of which is payable in cash) at the initial court appearance, he or she is transferred to the county jail to await the arraignment.

Adjudication. Tennessee does not have a unified court structure. DUIs are first arraigned in either a General Sessions court, which is a lower-level county court, or a similar court at the municipal level. The court in which a particular case will be heard depends upon where the alleged offense took place and who was the arresting police department.

In Chattanooga, a DUI defendant will be arraigned in either the Chattanooga City Court, if the arrest was made by the Chattanooga Police Department; a municipal court, if the arrest was made by police in any of the five other incorporated municipalities in Hamilton county; or the Hamilton County General Sessions Court, if the arrest was made by either the Tennessee Highway Patrol or the Hamilton County Sheriff's Department. All are trial courts of limited jurisdiction and none is a court of record.

There are three possible outcomes to the arraignment. If the defendant pleads guilty, he/she is sentenced on the spot. If the defendant pleads not guilty and opts for a non-jury trial, the case will be heard immediately by the general sessions or municipal judge, unless the defendant requests an attorney. If an attorney is requested, a later court date is assigned to the case. If the defendant pleads not guilty and requests a jury trial, the case must go before a grand jury which must decide if there is probable cause to indict for DUI. Obtaining an indictment appears to be a pro forma procedure (the Grand Jury returns an indictment in approximately 98% of the cases), but it is one means by which the defense can, if it wishes, delay the proceedings. If an indictment is returned, a second arraignment is held at which the defendant may again plead guilty or not guilty. If a not guilty plea is entered, the case proceeds to trial. Jury trials are heard in a higher level court, which in Chattanooga is the criminal division of the Hamilton County Sessions Court. Before trial there is a "settlement day" during which the defendant is given one last chance to plead guilty.

Appeals of DUI convictions are heard by the criminal court of appeals. Because the original proceedings are held in a court which is not a court of record, the trial on appeal is de novo.

The prosecution of drunk driving cases is made under the state rather than the local law. Drunk driving cases are prosecuted by a State District Attorney, who is elected on a partisan ticket.

The 1982 amendments restrict the use of plea bargaining in drunk driving cases. However sources in the State District Attorney's Office believe that the impact of this change has been minimal, as it was already that office's policy not to plea bargain DUI generally. The State District Attorney's office currently has no formal policy regarding reduction of any criminal charges, including drunk driving. However, when a chemical analysis shows that a defendant's blood alcohol level is at or above the legal standard of intoxication (.10% in Tennessee), the office almost never offers a plea bargain to a less serious offense. If the defendant had a blood alcohol level of less than .10%, or if there was no chemical test result, then the attorney in charge of that case might decide to plea bargain; however, an individual attorney who did so must be able to explain, in writing, his or her reasons for doing so.

As mentioned earlier, the Chattanooga office has received the services of a special prosecutor due to its participation in a Target of Opportunity project. This special prosecutor handles all of the criminal court DUI appearances and also appears in court on "DUI Task Force Day", which is every Wednesday in both City Court and General Sessions Court. Despite the addition of this DUI prosecutor however, it appears that the State District Attorney's office in Chattanooga is experiencing an increasing backlog of drunk driving cases, due to legislation prohibiting pretrial diversion of offenders, prosecutorial practices discouraging charge reduction, and the increased volume of jury trial demands and appeals.

Prior to the initial appearance, the State District Attorney's office receives no information regarding a drunk driving case. The warrant, which acts as the charging instrument, is forwarded directly to the court either by the Chattanooga Police Department or by the Hamilton County Sheriff's Department. If the drunk driving defendant does not plead guilty, the State District Attorney's office uses the information on the warrant as the basis for its pretrial investigation.

Arraignment in drunk driving cases is said to occur from seven to 10 days after arrest. By the time the arraignment occurs, the prosecution has searched the defendant's driver-licensing record for prior drunk driving convictions, if any, and has amended the charge, if appropriate, to an enhanced one.

The pretrial investigation by the State District Attorney's office usually consists of contacting the arresting officer, the backup officer (if one assisted), the officer who administered the breath test (if one was administered), and the victim (if there was one). Because of the increased use of expert testimony by defense counsel, the State District Attorney's office may also contact its own expert, usually the coroner. A prosecution expert is especially likely to appear in cases involving the suspected use of drugs other than alcohol.

The special prosecutor believes that more drunk driving defendants are requesting trials, even though there is no factual dispute at issue, out of a desire to delay sentencing and to settle the case just before trial. It has therefore become the policy of the State District Attorney's office not to settle any case, for the minimum sanctions, if it was unjustifiably delayed by defense tactics.

The office estimates that delaying tactics by the defense have increased the time from arrest to trial by 200%. Usually a case is disposed of within three to four months after an arrest, but it is possible for the defense to delay disposition much longer; some cases are still pending two years after arrest.

There is no public defender's office in Chattanooga and, although the court may appoint counsel for an indigent drunk driving defendant, that is rarely done. Generally, if a defendant can make bail or is employed, the judge will not consider him or her to be indigent. Retained counsel defending drunk driving cases have increasingly found new defenses to the charge, including lack of probable cause for the police stop, inaccuracy of the testing device, and the mishandling of blood specimens.

We have been told that, although reduction of drunk driving charges on the part of prosecuting attorneys rarely occurred even before the 1982 amendments took effect, about 95% of the drunk driving cases filed under the old law were reduced to convictions of lesser offenses by the trial judges. Therefore, the DA's office claims, first-offense convictions were rare, and multiple-offense convictions rarer still.

The trial judge still maintains the discretion to find a defendant not guilty of drunk driving when the evidence (usually a low blood alcohol concentration level) presents a "borderline" situation. Some local judges have been protective of their discretion; that sentiment created some initial resentment toward the mandatory sentences introduced by the 1982 amendments. A recent opinion by the Tennessee State Attorney General's Office held that reckless driving was not a lesser included offense of drunk driving, and there was therefore no basis for reducing the charge to reckless driving. However a few judges continue to amend a drunk driving charge to reckless driving, provided the defendant agrees to the amendment, although it appears that the judges in Chattanooga no longer do so.

It was the observation of several people in the criminal justice system that judges in Chattanooga have, since 1984, become increasingly wary of reducing drunk driving charges to reckless driving. The reason is that the judiciary recently received a great deal of unfavorable publicity surrounding its handling of two drunk driving cases in 1984; one involved the daughter of a Tennessee Supreme Court justice and the assistant to a United States Congressman, the other a former county commissioner.

However, there have been several instances in which "sitting judges" have avoided convicting and sentencing a defendant for drunk driving in a particular case. Judges use a sitting judge when they plan to be absent from their court on a given day. According to statute, the substitute judge is to be elected by a vote of the attorneys in the court that day. However, in actuality, the judge contacts an attorney to sit for him, and he is 'elected' pro forma by the attorneys in

court. These so-called sitting judges have been known to reduce drunk driving charges to reckless driving in particular cases, especially those involving defendants with political influence.

Chattanooga appears to be experiencing some problems with court congestion due to the influx of DUI cases. The lower courts carried a heavy calendar even before the 1982 drunk driving law amendments. The increase in the number of DUI defendants has worsened the problem, particularly in the Chattanooga city court. Approximately 90% of the DUI prosecutions are said to be disposed of at the lower level court.

The remaining 10% have created a backlog for the higher level courts. One reason for the number of jury trial demands and appeals has been the desire of defendants to delay, for as long as possible, the imposition of mandatory penalties (especially the 45-day jail sentence for a second offense). However, one of the session court judges observed that the number of cases going to trial or appeal is beginning to decrease as the system "stabilizes itself". One of the reasons for this is the fact that many criminal judges are giving drunk driving defendants who demand trials or appeal convictions sentences more severe than the mandatory minimum sentences.

A defendant who is convicted of drunk driving is required to surrender his or her license to the judge, if the license was not seized earlier by the police. Following conviction, the appropriate court clerk makes an "Abstract of Record" card which contains basic information about the defendant and his or her conviction. Since the court clerk's office is not computerized it can be difficult to locate a defendant's card, especially if the conviction is several years old. This increases the problem of locating a prior drunk driving charge if it is needed to charge the defendant with an enhanced offense if he or she is later arrested, and also the difficulty of collecting a fine agreed to be paid on an installment basis. However, because the Abstract of Record card is also sent to the Tennessee Department of Safety offices in Nashville and placed in a computerized record system, local courts can locate cards by applying to the Department, although the court that requests a person's record may wait several weeks to receive that information.

Sanctioning. The increased fine structure is a sanction which can cause significant hardship for a convicted DUI, particularly for a lower income defendant or when coupled with legal fees incurred in a jury trial or an appeal. However members of the Chattanooga system stated that the economic effects of the fines have not received much publicity. DUIs can work off their fine, at the rate of \$5 per day, except for the actual court costs, which are \$106.

Fines which are paid in their entirety are paid to the court clerk; when an installment-plan agreement is made to pay fines, the Abstract of Record is certified to Workhouse Records and falls under the jurisdiction of either the City of Chattanooga or the Hamilton County Auditor for collection. The city is currently collecting only about 40 to 45% of its fines, while the county in 1984-85

collected almost 90% of its drunk driving fines. In light of the city's difficulties in collecting fines, and the fact that the city owes Hamilton County money for the housing of convicted drunk drivers, the county has recently begun to collect the city's fines as well. Court personnel have begun to use civil remedies, such as garnishing wages, to collect unpaid fines.

The suspended license sanction was strengthened by the 1982 changes to the law. However, as it had been the policy of the Tennessee Department of Safety to revoke the licenses of all DUIs even prior to 1982, this sanction's effect on the system appears to be minimal.

It is said that prior to 1982 it was rare for a drunk driver to serve any time in jail. Of those who were charged with DUI, first offenders were almost never given jail sentences, and only about 50% of the second offenders served any jail time. However it was the perception of the interviewed officials in Chattanooga's criminal justice system that all convicted drunk drivers are now serving the minimum mandatory jail sentence.

In addition to the mandatory minimum sentences, several judges also sentence a defendant to the maximum allowable sentence (11 months and 29 days), and suspend the balance to create an additional disincentive, in the form of reimposed jail time, to driving drunk again. This belief is also held by the general public, as disclosed in a recent poll done by the ACTS Council.

There is presently some confusion in Chattanooga over whether a person sentenced to jail for drunk driving is entitled to credit for time served after arrest and before conviction. Tennessee law does not specifically address this question, although Tenn. Code Ann. section 55-10-403(b)(1) regarding suspension of sentence or probation requires that a sentence be "...fully served day for day at least until the minimum sentence provided by law."

Individual judges observe different policies in regard to credit for time served. It appears that none of the judges in Chattanooga will give a convicted drunk driver credit for the minimum six-hour sobering-up period spent in jail after arrest, and that some judges--but not all--will credit an offender with preconviction jail time totalling more than 48 hours against the 48-hour mandatory minimum sentence for a first offense. In a recent case, a City Court judge refused to credit an offender with the 51 days he served in jail against the 45-day sentence he received for second offense drunk driving.

Tennessee DUI law states that a convicted DUI is to serve his/her sentence in a county jail or workhouse. Because judges appear to be adhering to the mandatory jail requirements in sentencing DUIs, this has created a large influx of new prisoners into correctional facilities which were already experiencing problems with overcrowding, particularly in view of the state prison crisis. As in other jurisdictions, prisoners other than drunk drivers have been granted early release because of the overcrowding. This problem is expected to grow worse as increasing numbers of offenders accumulate second and third convictions.

The law also requires that a person convicted of a first offense DUI, and serving only a 48 hour sentence, be permitted to serve his/her time on weekends or at anytime which does not interfere with a normal work schedule. Additionally, many judges have been allowing DUIs with longer sentences to serve their time on weekends, which has created logistical problems for the correctional institutions.

Hamilton County has three detention facilities: a small city jail holding 30 prisoners; a county jail with space for 280 prisoners; and a 280 prisoner workhouse. The city jail acts only as a temporary holding facility. Most DUIs are housed in the workhouse (Silverdale), which recently opened a new wing for the exclusive use of convicted drunk drivers. Silverdale is run by a private organization, Corrections Corporation of America, which charges \$28 per day per inmate. DUIs at the workhouse are assigned work duties even though an armed guard must accompany them off the workhouse grounds. Approximately 40 persons convicted of drunk driving report to Silverdale each weekend to serve their sentence. Jail personnel stated that on some weekends they have had to turn offenders away because there has been no room for them.

The correctional facilities also appear to be experiencing financial problems as a result of the influx of DUI prisoners. The law provides that a portion of the fine money (\$15 per day) be used to cover the cost of housing the prisoner. However the reimbursement required by statute is less than the expense of housing prisoners. Further, many complain that these funds are being diverted because the funds go to the city where the offense took place, which is not necessarily the same jurisdiction where the prisoner will be housed.

In Chattanooga, fine revenue is deposited into a general contingency fund which is supervised by the mayor. The law provides that the corrections facility housing the prisoner is to be reimbursed for its costs from this fine. However, there has been some disagreements between the city and the county regarding the reimbursement of these funds. Currently 65 to 75% of the DUI prisoners at the workhouse have been sent there from the city court. At the present time the city has agreed to pay the county for the housing of DUI prisoners.

Silverdale charges the city in which the offense occurred \$28 a day for each drunk driving defendant (in contrast, it charges only \$10 per day for convicted felons). The county charges the city to the extent of the fine collected, and then the DUI offender for the remaining balance. The Workhouse budget for the fiscal year ending June 30, 1985, had to be amended by the addition of \$200,000. This amendment was required because the original budget was based upon an average daily inmate census of 260, and the actual inmate census for the last seven months of the fiscal year was almost 300, attributable to a large degree by the influx of DUI prisoners.

The alcohol treatment program is run by the Sheriff's Department, so a DUI may attend the classes while in jail. A convicted DUI is evaluated before being placed in a DUI class, and additional treatment, either on an in-patient or out-patient basis may be recommended. However, it appears to be rare for any treatment beyond the mandated drunk driving school to be recommended, primarily because there is no public treatment program available and few can afford the

cost of private treatment. There is one local resource for treatment, the Council on Alcoholism and Drug Abuse; the Council was originally expected to fill the void in public treatment, but so far that has not been the case. Those who are able to afford private treatment generally are able to receive more lenient sentencing although they, too, are still required to serve the minimum mandatory jail term.

## Nashville

Background. Nashville is located in the hilly, north central section of Tennessee, about 35 miles from the Kentucky border, and is the second largest city in the state (1984 metropolitan statistical area 890,300). Nashville is the state capitol of Tennessee, and home to Tennessee State University, Vanderbilt University, Fisk University and several other schools. The Tennessee State Penitentiary is also located in Nashville.

Nashville's economy is mixed, with most of its employment in the manufacturing, printing, service and government sectors, although its best known industry is the country music industry, which generates a sizable tourist trade. As a result of the large number of tourists and the fact that three Interstate Highways converge here (north-south I-65, northwest--southeast I-24, east-west I-40, there is a heavy volume of traffic on Nashville roads.

Enforcement. Enforcement of the drunk driving law in Nashville is handled by the Nashville Metro Police Department and the Davidson County Sheriff's Department. As in Chattanooga, arrests are also made by the Tennessee Highway Patrol.

Beginning in 1973, the Nashville police department embarked upon a four-point program to increase the effectiveness of its drunk driving enforcement. The steps undertaken were to add enforcement tactics; install modern testing equipment and procedures; provide personnel training by qualified experts in the field; and increase public awareness of the drunk driving problem. The department obtained a grant from the Federal Highway Safety Program which allowed it to update testing equipment and to purchase the first fleet of mobile testing vehicles to be used anywhere. More recently, Nashville has received some money provided to the State under a Section 402 of the federal Highway Safety Act to finance a DUI Task Force. The department has also experimented with the use of surprise road blocks, particularly during holiday times.

Nashville police claim that there has not been a significant increase in the number of arrests in their jurisdiction since 1982. They made approximately 4800 DUI arrests in 1984.

Adjudication. Before 1977, DUI trials were conducted by the criminal courts, where first offense DUI was routinely reduced to reckless driving. From 1977 to 1982 Judge North of the Fifth Circuit Court handled all DUI cases in much the same manner. In 1982, Judge Walter Kurtz took over the circuit court and began to follow the law's mandated jail sanction. In early 1984, Kurtz decided not to hear any more DUI cases and Judge Everett of the Probate Court and several criminal court judges took over the cases.

As in Chattanooga, prosecution of drunk driving cases is made under the state law and is handled by the State District Attorney's Office. The Nashville office has not received an increase in either its budget or its staff since the 1982 amendments to the DUI law, and as a result it appears to currently have a backlog of cases pending trial or disposition. These backlogs were said to number about 100 and 500, respectively, in late 1986.

Our contacts in Nashville have stated that there has been no significant increase in the lower level court caseload because most DUI defendants plead guilty at their arraignment. However, the higher level courts have been subjected to an "overwhelming" number of jury trials, which has resulted in a sizable backlog, due to increased requests for jury trials and appeals as DUI defendants seek to avoid or delay the mandatory jail sentence, especially for second offenses, and the suspension of their drivers license.

There was a dilemma in the Nashville courts regarding the use of breath-alcohol tests in court. In March 1983, two different cases were being heard in which the same defense attorney requested that the "breath alcohol results" not be admitted in evidence under the claim that this method of testing was not accurate. One hearing regarding this issue was held with both judges in attendance, each to render his own finding concerning the admissibility of such tests in his court. Judge Kurtz ruled shortly after the hearing that the results of a test were admissible in court, provided the instrument was properly calibrated and administered by a qualified person. He further ruled that it would be improper to base a conviction solely on a breath sample of .10% to .13%. However, six months later Judge Everett ruled to the contrary, holding that breath tests would not be allowed into evidence in his court. The result has been an increasing number of hung-juries and acquittals in Nashville, according to our contacts.

Sanctioning. In Davidson County, there are four correctional facilities, which house about 750 prisoners: a new correctional facility, the Criminal Justice Center, which holds 362 prisoners; a misdemeanor jail, the Hill Building, holding 180; a workhouse, the Metro Workhouse, for 180 prisoners; and a work-release facility, the Pre-Release Center, for 52 prisoners. All are administered by the Davidson County Sheriff's Department, which has a staff of 325. Most first offense DUIs serving a 48 hour sentence are placed in the Pre-Release Center.

Originally, DUIs were permitted to schedule their own confinement, but faced with a backlog of over 1200 DUI prisoners, the corrections personnel now handle the scheduling. Currently, they must find space for 40 new first offenders every weekend. This is being accomplished by placing non-DUIs serving time in the workhouse on work-release on the weekends, and replacing them with first-offense DUIs. Because of overcrowding problems, DUIs are placed on a waiting list in order to serve their sentence. This problem is exacerbated by the fact that 20% of DUI offenders fail to appear on a given weekend. To help dramatize this dilemma, Sheriff Fate Thomas placed DUI offenders in a "tent city" in the gymnasium of the Criminal Justice Center. Incarcerated DUIs must spend their time sitting in their cells, as the institutions do not have a sufficient number of armed guards to accompany them on outside work duties.

As in Chattanooga, Nashville has been experiencing financial problems due to the influx of DUI prisoners and the difficulty in gaining reimbursement for their housing costs. Sheriff Thomas attempted to remedy the financial situation by backing legislation which would give a portion of the fine money to a local drinking-driver control system, which would include enforcement, adjudication and jail. This plan would apply to a certain class of cities, of which only Nashville would meet the criteria. However his efforts to enact this legislation have so far been unsuccessful.

Before the 1982 changes in the law, the DUI treatment program was run by a for-profit corporation. After the changes this function was taken over by the Nashville Metropolitan government. Before being assigned to a class, clients are screened (i.e. MAST, etc.) and may be referred to treatment. Classes run 12 1/2 hours over 5 weeks at a cost to the DUI of \$50. Multiple offenders may be required to repeat the class. An additional fee of \$50 is levied for four to six more weeks of treatment. The Nashville agency currently handles 2000 DUI cases a year and has the use of 15 probation officers to act as intermediaries between the courts, the convicted DUIs and treatment agency.

4.2.2 Quantitative Analyses. The heart of the quantitative analysis was an analysis of two cohorts of drivers, one cohort chosen from drivers arrested before the new law, and the other chosen from drivers arrested after the new law. The analysis was similar in concept to the statewide recidivism analysis presented in Section 3.0, except that it considered more system "states."

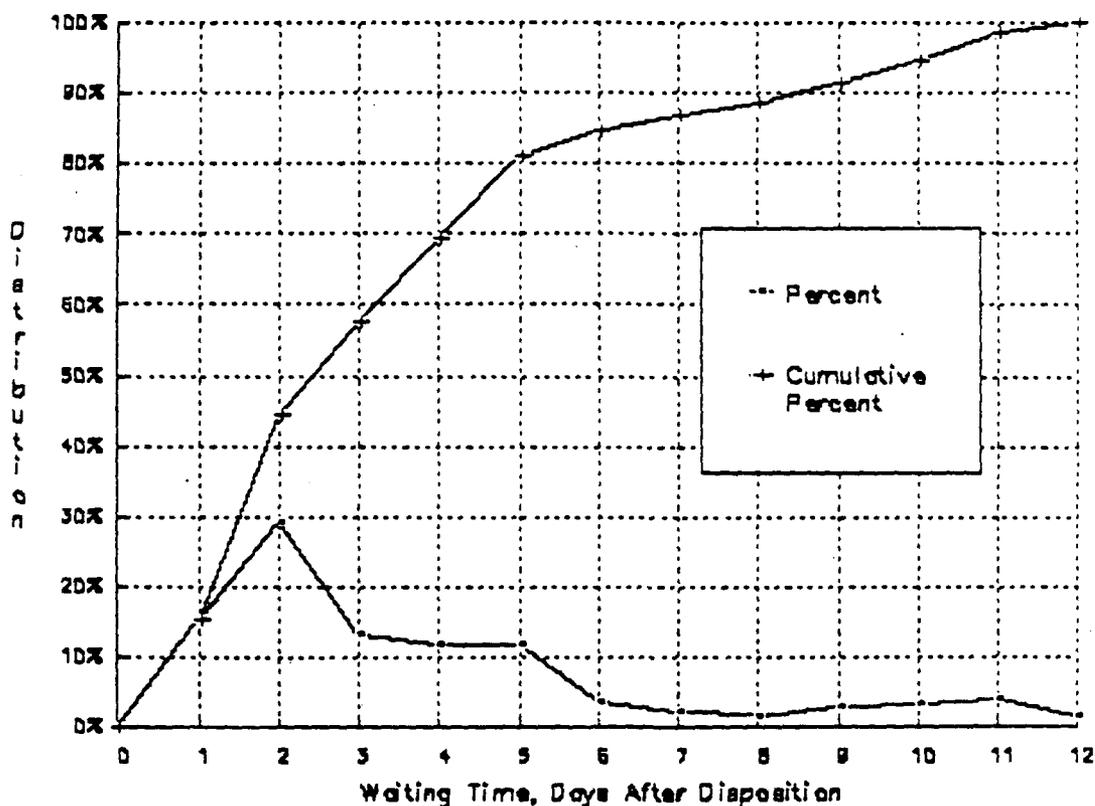
The HSRC team collected and analyzed the quantitative data in Chattanooga. It was decided to use drivers arrested for drunk driving by the Chattanooga Police Department (CPD) as the cohort to be studied. CPD makes about 80-85 percent of drunk-driving arrests in the county. Arrest data came from computerized records and from the city jail where arrests are processed. Most of the disposition data came from the city courts, but data on jury trials came from the county courts. Jail data were collected at the city and county jails. Data for the "before" period were for arrests occurring in 1980, and the "after" period used arrest data for 1984.

The offender-tracing process in Chattanooga started with computerized records of arrests made during 1980 and 1984. These were sorted by arrest date and by offender name and compared to the arrest log at the city jail for verification and updating as necessary. The clean file of arrests was then used to select records from court docket books to determine dispositions. Disposition data were used to determine from jail records when offenders started and completed their jail sentences.

The data for the 1980 cohort were unsuitable for a rigorous analysis of case dispositions. However, it was clear that only a very small fraction of the 1980 cohort received a jail sentence, and that there were many instances of charge reduction. The 1984 cohort was composed of 1950 DUI arrestees, 1820 (93%) of which had a court record of a disposition. Of the 1820, 1693 (93%) were tried on DUI, and 125 (7%) were tried on other offenses. Of the 1693 who were tried on DUI, 1527 (90%) were found guilty of DUI. 1226 of the 1527 (80%) spent some time in jail, and 1209 (79%) spent at least two days in jail.

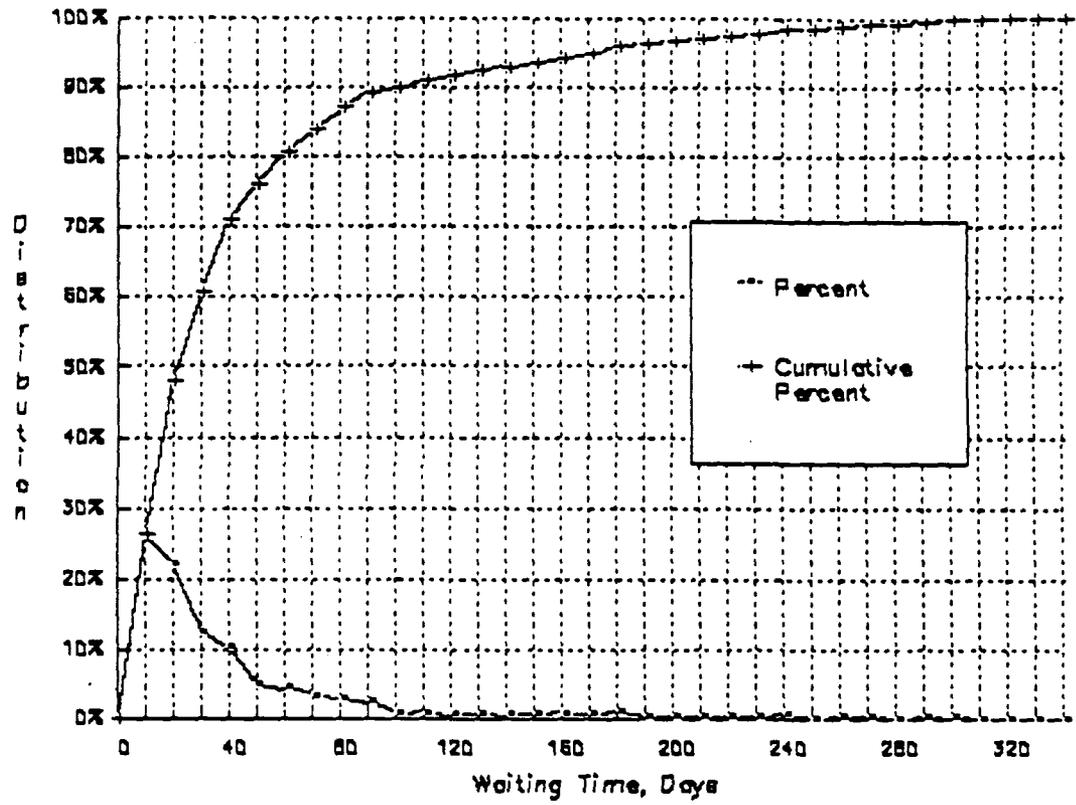
The data indicate that there was very little delay in entering jail once a disposition had been rendered. Of 868 cases of 1984 arrestees examined, 50% of the offenders had waiting times of two days or less, and nearly all of the offenders had entered jail before 11 days (Figure 4-1). The waiting time between arrest and disposition delay was considerably longer, but still quite short compared to that in many jurisdictions we have studied. Of 896 offenders who eventually were convicted of DUI, 50% had their case disposed of within 20 days, and 95% had their case disposed of within six months<sup>1</sup> (Figure 4-2).

Figure 4-1: Distribution of Waiting Time Between Disposition and Entry Into Jail - Chattanooga



<sup>1</sup> A total of 615 cases had either a missing arrest date or a missing disposition date, with most of the missing dates being disposition dates. It seems likely that most missing disposition dates were for cases that had been delayed for some reason and could not be entered into the records routinely. This would tend to make the waiting times shown in Figure 4-2 shorter than they actually were.

Figure 4-2: Distribution of Waiting Time Between Arrest and Disposition - Chattanooga



The disposition-to-jail waiting time followed an exponential distribution very closely (Figure 4-3). However, the arrest-to-disposition time was too heavily weighted toward the short waiting times to be modeled with any precision as an exponential distribution (Figure 4-4). This could be due to a large proportion of individuals "pleading out" quickly.

Figure 4-3: Exponential Model of Cumulative Distribution of Waiting Time Between Disposition and Entry Into Jail - Chattanooga

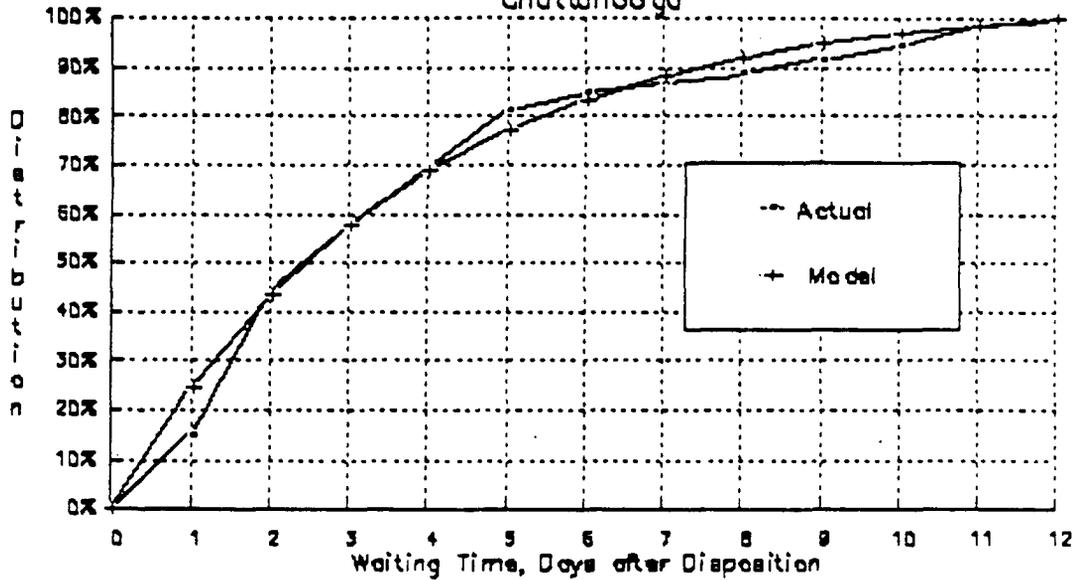
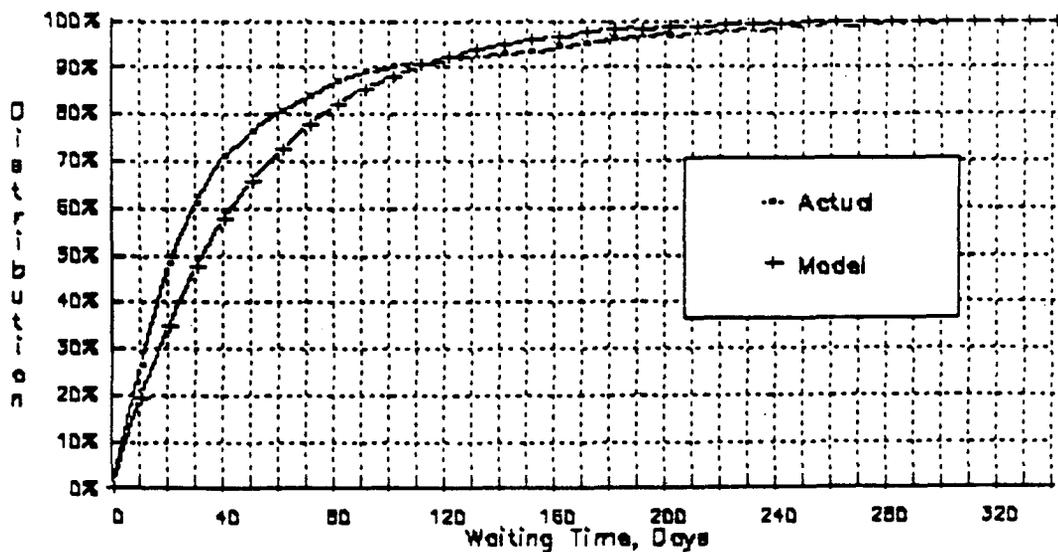


Figure 4-4: Exponential Model of Cumulative Distribution of Waiting Time Between Arrest and Disposition - Chattanooga



Mid-America collected the system analysis data in Nashville. The data-collection environment in Nashville is entirely different from that in Chattanooga. Nashville has had a computerized criminal justice information in operation since 1972. The system is operated by the Metropolitan Police Department and contains information for all of Davidson County. There are three basic subsystems in the Nashville CJIS:

- Impairment Testing;
- Arrest;
- Court; and
- Jail.

The impairment-testing subsystem contains information collected by the police after a suspect has been brought into a testing facility and includes the driver's BAC if a BAC test was not refused. The arrest subsystem contains information about the arrest itself, including booking date, driver license number, suspect descriptive data, complaint number, warrant number, amount of bond posted, etc. The court subsystem contains some information from the arrest subsystem (e.g., date of arrest, suspect descriptive data, warrant number), plus information on court appearances and case disposition. The jail subsystem contains information on an offender's entry into and exit from the Davidson County Jail (including the workhouse).

Arrangements were made to collect pertinent data from the Nashville CJIS and for the data to be placed into a computerized database for analysis by Mid-America. Mid-America then manually spot-checked these data before accepting them into the analysis file. The computerized database was constructed by the Nashville Police Department at no cost to the project.

An initial analysis of the Nashville data tape was made to determine the time-dependent probabilities associated with four system states. The states were defined as follows:

1. Arrested for DUI and awaiting case disposition.
2. Found guilty of DUI only.
3. Found guilty of a non-DUI offense.
4. Not convicted of any offense (case dismissed, found not guilty of any offense, etc.).

The data indicate that about 99 percent of those arrested for DUI in 1980 and 1984 had their cases decided on or before 35 30-day periods. Approximately 43 percent of those arrested were convicted of DUI. Another 20 percent were convicted of some other offense, and about 36 percent were not convicted of any offense.

We performed an additional analysis to determine the above state probabilities for two different years, 1980 and 1984. A primary objective of this analysis was to see if there was any difference between the DUI conviction rate in 1984 and the rate for 1980.

The results of this analysis are summarized in Table 4-1. They show a very large increase in the DUI conviction rate for the 1984 cohort, 63% for the 1984 group versus only 24% for the 1980 group. Further, only 6% of the 1984 group were convicted of some other charge, compared to 35% of the 1980 group. Note that some 59% of the drivers who were convicted in 1980 were convicted of a non-DUI offense. In 1984 this figure was only about 9%. This tends to substantiate the belief held by many actors in the Tennessee criminal justice system that it was common practice to reduce DUI charges prior to the new law, but that this practice is no longer common, at least in Davidson County.

The data also show that the conviction rate in Davidson County rose to a very respectable level after the introduction of the new law. The 63% value is quite high compared to the DUI conviction rate of most jurisdictions we have studied in the past and should rise to an even higher value as the remainder of the cases of those who were arrested in 1984 are disposed of.

Finally, the data provide further support for the hypothesis that the reduction in conviction recidivism after the introduction of the new law in 1982 was due to effect of the law. Clearly, the decrease could not be due simply to a reduction in conviction rate, since the conviction rate increased 2.6 times.

The Nashville data from CJIS dealt primarily with arrests and convictions, and systems staff in Nashville believed the data not to be suitable for analyzing flow into and out of the jail. Analyses of the jail population by the Sheriff's Department staff indicate that very large backlogs of the order of 12 to 18 months occurred by 1984, but that the backlogs are now beginning to diminish.

**Table 4-1 - Conviction Rates For Drivers Arrested For DUI  
In Davidson County, Tennessee, In 1980 and 1984**

Cohort	% Convicted of DUI	% Convicted of Other Offense	% Not Convicted
1980	24	35	41
1984	63	6	31
1980 & 1984	43	20	36

#### 4.3 Summary and Conclusions

Changes in 1982 to the state DUI law greatly increased the severity of the sanctions imposed for drunk driving convictions and included mandatory jail sentences. These changes had repercussions on all sections of the legal environment.

The mandatory jail sentence does not seem to have affected the level of activity or the efficiency of the law enforcement agencies, although the use of DUI Task Forces in both jurisdictions, and the public policy emphasis on drunk-driving enforcement in general, resulted in an initial increase in the number of DUI arrests. Figures provided by the Chattanooga Task Force indicate that the rate of DUI arrests is now declining there.

The State District Attorney's Office faces an increasing backlog of cases, due both to the fact that the legislative changes discourage pre-trial diversion and to DUI defendants' increased demand for jury trials and appeals in the face of jail sentences.

The lower-level courts appear to have experienced a significantly increased case load, even though most defendants charged with DUI plead guilty. The Chattanooga City Court, whose case load was already very heavy, has been particularly affected by the increased number of DUI cases. The higher-level courts have been faced with a sizable increase in the number of jury trial and appeals. The increase in jury trials seem to be the result of the mandatory jail sentence since both restrictions on plea bargaining and license revocation policies had previously been followed in the systems. This seems to be especially true in the case of second offense DUI charges when the minimum sentence is 45 days. The situation is similar as regards the increase in appeals, although more of the appeals were the result of first offense convictions, which many feel will decrease in number now that restricted licenses have been made easier for them to obtain.

The number of DUI convictions began increasing even before the 1982 amendments, and they have continued to increase since that time. Statewide convictions have gone from about 12,000 in 1977 to over 29,000 in 1986. Our case studies indicate that this increase is not due just to more arrests, but also a much higher conviction rate. It is also clear that the once-common practice of reducing a DUI charge to a non-alcohol related offense is now relatively rare.

Further, our case studies indicate that the great preponderance of persons convicted of Drunk driving are being given jail sentences as the law intended. This is in sharp contrast to the situation before the new law when jail sentences were a rarity. Further, from our case studies there is evidence that a large fraction of those convicted of drunk driving are spending at least two days in jail. Our case studies gave different results about the amount of time that elapses between arrest and entry into jail. In Chattanooga, it appears that most of the offenders are being jailed within a month of arrest, while in Nashville large backlogs were reported, with waiting time of a year or more at some points in time.

The repercussions of mandatory jail sentencing have fallen heaviest on the corrections segment of the system. Not only has the general strengthening of the DUI law resulted in an increase in the number of DUI convictions, but the mandatory sentencing has meant that almost all of those convicted will be spending some time in a jail or workhouse. There are two related problems caused by the increase in DUI prisoners. The first is that of lack of space. Most of the facilities have experienced overcrowding problems which have resulted in backlogs in DUI prisoners. This problem is made worse by the use of weekend sentencing, particularly of longer sentences, which disrupt the facilities' operations.

The second problem is one of the cost of housing the increased number of DUI prisoners. Amendments to the DUI law supposedly provided for this expense, although the stipulated amount often fell short of a prisoner's actual cost, especially for second or subsequent offenders. However, because of the way in which the funds are disbursed, the institutions which are housing the DUIs are often not the institutions receiving the money. Both these problems will be exacerbated as the number of second and subsequent offenders in the system increases. Nevertheless, both jurisdictions seem to have been able to cope with the situation.

Many people, both within and outside the criminal justice system, believe that further "fine-tuning" of Tennessee's drunk driving law will take place in the near future. Some possible changes include the substitution of community work (with an emphasis on physical work) for the jail sentence for a first offender; allowing convicted drunk drivers to undergo inpatient treatment instead of jail under certain circumstances; establishing public treatment programs; and removing all drunk driving cases to General Sessions Court, since the city courts have been more backlogged than the General Sessions Court and since all convicted drunk drivers are being incarcerated in county facilities.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The general conclusion of this study is that the mandatory jail sanction had an immediate but temporary effect on drunk-driving recidivism Tennessee, but no measurable effect on alcohol-related crashes. Despite the fact that large numbers of convicted drunk drivers are serving time in jail, jail is not perceived as a serious threat by most drivers who have not yet been caught and punished in Tennessee. On the other hand, the threat of an even more severe jail sentence for **multiple-offense** drunk driving seems to be a deterrent for some drivers who have been caught and sent to jail.

It appears reasonable that the introduction of mandatory jail as a drunk-driving sanction should be accompanied by a PI&E campaign, and that the campaign should continue beyond the initial implementation of the sanction. Nevertheless, it is possible that jail will never be an effective long-term general deterrent, but must be experienced to be at all effective. If this is true, then a large-scale traffic safety effect will not be likely because of the impossibility of catching and jailing enough drunk drivers. Then, the adoption of mandatory jail would not be wise public policy because of the cost burden placed on the criminal justice system.

We recommend more testing of mandatory jail in Tennessee in conjunction with a large-scale and continuing program of public information and education. Only then can the general-deterrent effect, if any, be measured. Pending the outcome of these tests, we cannot recommend that states adopt mandatory jail as a sanction for drunk driving. Given the lack of any convincing evidence of a deterrent effect commensurate with the difficulty of maintaining the provisions of the Tennessee law, we advise states considering adopting a tough mandatory jail law to be both skeptical and extremely cautious.

Specific conclusions and recommendations associated with the various substudies conducted in this project are given below.

### 5.1 Public Awareness

5.1.1 Conclusions. The full-scale driver survey tended to confirm our preliminary finding that there is a deficiency in both the awareness and the credibility of mandatory jail among the general driving public in Tennessee. This could well be the reason why we have found no significant reduction in surrogate measures of alcohol-related crashes, despite our finding that recidivism showed an initial drop. Apparently, the relatively small percentage of drivers who have experienced mandatory jail are somewhat less likely to engage in DUI than are the much greater percentage who have not experienced mandatory jail and are not convinced that it is a significant threat.

5.1.2 Recommendations. As indicated above, we recommend the implementation of an extensive statewide program of public information and education. The program should be maintained for at least one year at a high level of activity and

be accompanied by analyses of public attitudes and of fatal accidents. The program should stress both the certainty and the unpleasantness of jail.

## 5.2 Fatal Accidents

5.2.1 Conclusions. The overall conclusion of our analysis of fatal accidents is that there is that the 1982 legislation has had no apparent effect on alcohol-related crashes. We found that, while there was a slight reduction in nighttime single-vehicle fatal accidents, the reduction is not statistically significant, and the same effect can be observed in Kentucky and Alabama. A more puzzling finding was that nighttime multivehicle fatal accidents may have decreased after the intervention, but this finding was inconclusive.

5.2.2 Recommendations. Additional analyses of the accident data should be conducted to see if there was any effect associated with the PI&E campaign. Such an effect should appear as a reduction in fatalities compared with the predictions.

We also recommend that additional analyses of disaggregated data be conducted to see if there any categories of drivers who are more affected or unaffected by jail than are other categories. For example, it is possible that drivers involved in nighttime single-vehicle fatal accidents may be "hardcore" DUIs who are not deterred by punitive sanctions. Therefore, it may be possible to find other accident types where alcohol plays a role, but the drivers are more influenced by the sanctions.

Our finding that nighttime multivehicle accidents may have decreased after the intervention also needs further study.

## 5.3 Recidivism

5.3.1 Conclusions. We conclude that drunk-driving recidivism in Tennessee decreased by about 11% after the introduction of the new law requiring mandatory jail for first and subsequent drunk-driving convictions. However, this reduction has not held up thus far, and aggregate recidivism rates have returned to their pre-intervention level. One possible explanation for this temporary effect is that jail overcrowding is delaying recently convicted DUIs from entering jail in some jurisdictions.

We found that drivers without prior DUI convictions had a much greater initial decrease in recidivism than did those with prior convictions. This may be due the group with priors having a larger percentage of alcohol abusers who are less able to control their drinking-driving behavior.

5.3.2 Recommendations. We recommend that the recidivism analyses begun under this contract be continued, and that aggregate recidivism be monitored at the state level and for various categories of jurisdictions around the state. The conviction files maintained by the Tennessee Department of Safety are a valuable resource that can shed much light on the effectiveness of traffic law system processes.

Again, we recommend that additional studies be conducted to determine which, if any, categories of drivers are more or less likely to be reconvicted for DUI after serving a jail sentence. This will require the creation of new databases which disaggregate the recidivism data.

#### 5.4 System Effects

5.4.1 Conclusions. As expected, the courts and the corrections system have experienced the largest effects of the mandatory jail provisions of the 1982 law. Caseloads throughout the adjudication system, from prosecution to appeals courts, have increased greatly, with a resulting large increase in backloads and case processing time. Provisions of the law prohibiting charge reduction have contributed to this problem. Many more drivers are now being charged and convicted of DUI than they were prior to the intervention, and a much larger percentage of drivers arrested for DUI are being convicted of DUI.

Further, a very large percentage of convicted DUIs are going to jail, and, as a consequence, many jails have become overcrowded and backlogged. This situation has been exacerbated by the placement of inmates of the state penitentiary into jails because of the facilities crisis at the penitentiary. The resources of many jails in Tennessee have thus been severely taxed, and insufficient attention has been given to providing the resources needed to cope with the added burden. However, overcrowding has not been an overwhelming problem in all jurisdictions. For example, we found very little delay in adjudication and sanctioning in Chattanooga, a relatively large jurisdiction with the order of 2,000 DUI arrests per year.

There continues to be strong opposition to mandatory jail, but for a variety of reasons, the opposition has been unable to soften the law with such provisions as judicial discretion and less severe alternative sanctions (e.g., community service). There is a very good chance that these forces will eventually be successful.

#### 5.5 Insights and Observations

The Tennessee experience with mandatory jail sanctions for drunk driving represents one of society's most significant attempts to increase the effectiveness of the traffic law system in one of the system's most important modes of operation, i.e., controlling alcohol-crash risk. Seldom has there been an opportunity to observe the effects of a really large increase in the intensity of activity of a single component of the system in a large jurisdiction.

In Tennessee, the ultimate criminal threat of the traffic law system, incarceration, was made a reality at great effort and expense. Although there were many flaws in implementing mandatory jail, the sentencing practices of most judges appear to have been changed, and the great majority of offenders are eventually going to jail. Thus, the Tennessee experiment represents a reasonable attempt under real-world conditions at pushing the punitive criminal sanction for DUI to its limit. The fact that little or no positive traffic-safety effect has been found provides a strong comment on the limitations of the criminal justice system for dealing with societal problems of this type.

**APPENDIX**

## SURVEY ON DRINKING AND DRIVING

This survey is being conducted to find out how drivers feel about Tennessee laws on drunk driving. This is a survey, not a test. You are not required to sign your name to this questionnaire or to identify yourself in any way. Please take your time and answer each question on both sides to the best of your ability.

1. What is your sex?       MALE                       FEMALE
  
2. What is your age?      \_\_\_\_\_ (YEARS)
  
3. Do you think that Tennessee law **requires** everyone convicted of drunk driving for the first time to receive certain penalties?  
 YES       NO -- go to Question 4

3a. What do you think those penalties are, and what percent of convicted first offenders would you guess actually get them?

PENALTY	PERCENT GETTING PENALTY
_____	_____ %
_____	_____ %
_____	_____ %
_____	_____ %
_____	_____ %

3b. Would you say that any of the penalties you listed above have had a strong effect on your own drinking and driving?

YES                       NO -- go to Question 4

3c. Which penalties? \_\_\_\_\_  
 \_\_\_\_\_

4. What messages can you remember hearing or seeing about drunk driving in the last six months (for example, on TV, on the radio, in the newspaper, on posters, on signs, etc.)? Please indicate what the message was and where you heard or saw it.

THE MESSAGE	WHERE
_____	_____
_____	_____
_____	_____

please continue on the back

5. In general, about how often do you drink beer, wine, or liquor?

EVERY DAY                       SEVERAL TIMES A WEEK                       ONCE A WEEK  
 1-3 TIMES A MONTH                       LESS THAN ONCE A MONTH                       NEVER--stop

6. About how often do you drink alcoholic beverages and then drive?

EVERY DAY                       SEVERAL TIMES A WEEK                       ONCE A WEEK  
 1-3 TIMES A MONTH                       LESS THAN ONCE A MONTH                       NEVER--stop

7. During the past six months, about how often would you say you have driven after drinking enough to be legally drunk?

EVERY DAY                       SEVERAL TIMES A WEEK                       ONCE A WEEK  
 1-3 TIMES A MONTH                       LESS THAN ONCE A MONTH                       NEVER--stop

8. Compared to six months ago, has your frequency of driving after drinking...

INCREASED                       DECREASED, or                       STAYED THE SAME-stop

8a. If your frequency of driving after drinking has changed, please indicate why.

INCREASED ENFORCEMENT  
 DECREASED ENFORCEMENT  
 GREATER CHANCE OF BEING CONVICTED  
 LESSER CHANCE OF BEING CONVICTED  
 STRONGER PENALTIES  
 WEAKER PENALTIES  
 OTHER: \_\_\_\_\_

Thank you very much for completing this questionnaire